**University of Alberta**

# Values motivating the purchase of organic food: A laddering analysis

by

Florence Wen Chei Chan

A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Master of Science

in

Food Science and Technology

Department of Agricultural, Food and Nutritional Science

Edmonton, Alberta
Fall 2008

Library and Archives Canada

Published Heritage Branch

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque et Archives Canada

Direction du Patrimoine de l'édition

395, rue Wellington
Ottawa ON K1A 0N4
Canada

*Your file Votre référence*
*ISBN: 978-0-494-47189-0*
*Our file Notre référence*
*ISBN: 978-0-494-47189-0*

NOTICE:
The author has granted a non-exclusive license allowing Library and Archives Canada to reproduce, publish, archive, preserve, conserve, communicate to the public by telecommunication or on the Internet, loan, distribute and sell theses worldwide, for commercial or non-commercial purposes, in microform, paper, electronic and/or any other formats.

The author retains copyright ownership and moral rights in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

AVIS:
L'auteur a accordé une licence non exclusive permettant à la Bibliothèque et Archives Canada de reproduire, publier, archiver, sauvegarder, conserver, transmettre au public par télécommunication ou par l'Internet, prêter, distribuer et vendre des thèses partout dans le monde, à des fins commerciales ou autres, sur support microforme, papier, électronique et/ou autres formats.

L'auteur conserve la propriété du droit d'auteur et des droits moraux qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

---

In compliance with the Canadian Privacy Act some supporting forms may have been removed from this thesis.

While these forms may be included in the document page count, their removal does not represent any loss of content from the thesis.

Conformément à la loi canadienne sur la protection de la vie privée, quelques formulaires secondaires ont été enlevés de cette thèse.

Bien que ces formulaires aient inclus dans la pagination, il n'y aura aucun contenu manquant.

Canada

**Abstract**

Laddering interviews were conducted with organic food consumers to identify the core values motivating organic food purchase decisions. These values included health, environmental concern, social/ethical considerations, having a good quality of life, and feeling good about one's self. A questionnaire based on the results from the qualitative interviews revealed that the strength of motivation from health, environmental, and social/ethical values increases as the purchase frequency of organic food increases. The questionnaires were administered as part of a consumer sensory panel evaluating preference for organic produce items. Paired preference sensory evaluation found no significant difference in preference for organic or conventional grape tomatoes and baby-cut carrots. However, consumers believed that the sample with better taste/more flavor was organic. Results suggest that more experience with eating organic food increases the consumer's ability to taste the difference between organic and conventional food.

**Acknowledgements**

I would like to thank all those who have contributed to the completion of my research. To my supervisor, Dr. Wendy Wismer, thank you for your support and guidance over the last 2 years. To my committee members, Dr. Peter Boxall and Dr. Naomi Krogman, thank you for all your time and expertise.

I would like to thank Dr. Sean Cash for his knowledge and assistance in questionnaire development. I would also like to thank Julie Vanderkloet for sharing this experience with me; it would not have been the same without you.

To everyone in the lab, Susan Gibson, Tristin Brisbois, Lorelei Martinez, Brenda Barona, and summer student Janelle Tolton, thank you for your support and encouragement. Special thanks go to Janelle Tolton and Lorelei Martinez for their assistance with the consumer panel and data entry.

Last, but not least, I would like to thank Malcolm for his patience, understanding, and constant support through this endeavor, and, more importantly, his knowledge and assistance with computer-related issues.

## Table of Contents

**Chapter 1 Introduction and literature review**

1.1 What is organic food? 1
1.2 The organic food market 1
1.3 The Canadian organic food consumer 2
1.3.1 Demographic profile 2
1.3.2 Place of purchase 2
1.4 Motivations for organic food purchase 3
1.4.1 Personal health and food safety 3
1.4.2 Environmental concern 5
1.4.3 Concern for animal welfare 5
1.4.4 Superior quality and taste 6
1.5 Values motivate product choice 7
1.5.1 What are values? 7
1.5.2 Measuring values 8
1.5.3 The means-end chain (MEC) theory 9
1.5.4 The laddering technique 10
1.5.5 Studies adopting the laddering technique 11
1.6 Limitations to previous research 14
1.7 Research objectives 15
1.8 Literature cited 16

**Chapter 2 Values motivating the purchase of organic food by non-committed organic food consumers: A laddering analysis**

2.1 Introduction 24
2.2 Methods 26
2.2.1 Participant recruitment 26
2.2.2 Laddering interviews 26
2.2.3 Data analysis 27
2.3 Results 28
2.3.1 Sample description and organic food purchase behavior 28
2.3.2 Hierarchical value maps (HVM) 29
2.3.2.1 Personal health 30
2.3.2.2 Protection of the environment 31
2.3.2.3 Social/ethical considerations 32
2.3.3 Negative aspects of buying organic food 34
2.3.4 Perceptions about organic food production 36
2.4 Discussion 37
2.5 Conclusion 40
2.6 Tables 42
2.7 Figures 43
2.8 Literature cited 46

**Chapter 3 An assessment of the values motivating organic food choice among committed, non-committed, and non-organic food consumers**

3.1 Introduction..... 49
3.2 Methods..... 50
3.2.1 Questionnaire development..... 50
3.2.2 Consumer panel location, recruitment, and format..... 51
3.2.3 Data analysis..... 52
3.3 Results..... 53
3.3.1 Sample description..... 53
3.3.2 Assessment of values among committed, non-committed, and non-organic food consumers..... 54
3.4 Discussion..... 55
3.5 Conclusion..... 58
3.6 Tables..... 59
3.8 Literature cited..... 64

**Chapter 4 Consumer preference for organic and conventional grape tomatoes and baby-cut carrots**

4.1 Introduction..... 66
4.2 Methods..... 67
4.2.1 Food products..... 67
4.2.2 Consumer panel location, recruitment, and format..... 67
4.2.3 Sample preparation and sensory evaluation..... 67
4.2.4 Data analysis..... 68
4.3 Results..... 70
4.3.1 Sample description..... 70
4.3.2 Consumer preference for organic tomatoes and carrots..... 70
4.3.3 Regression analyses..... 71
4.3.3.1 Effects on consumer preference..... 71
4.3.3.2 Effects on ability to correctly identify the organic sample.... 71
4.4 Discussion..... 72
4.5 Conclusion..... 74
4.6 Tables..... 75
4.7 Literature cited..... 80

**Chapter 5 Summaries, conclusions, and recommendations**

5.1 Summaries..... 82
5.1.1 Chapter 2..... 82
5.1.2 Chapter 3..... 83
5.1.3 Chapter 4..... 83
5.2 Conclusions and recommendations..... 84
5.3 Literature cited..... 86

## Appendices


| | | |
|---|---|---|
| Appendix 1 | Moderator guide for laddering interviews..... | 88 |
| Appendix 2 | Demographic questionnaire for laddering interviews..... | 89 |
| Appendix 3 | Questionnaire for consumer panel..... | 90 |
| Appendix 4 | Demographic questionnaire for consumer panel..... | 92 |
| Appendix 5 | Paired preference questionnaire for consumer panel..... | 93 |

**List of Tables**


2-1 Demographic profile of participants in laddering interviews (n=23)..... 42

3-1 Value statements, Cronbach's alpha, mean ratings, and standard deviations of responses to questionnaire (n=198)..... 59

3-2 Demographic profile of questionnaire participants (n=198)..... 61

3-3 Correlations between organic food consumer groups and value dimensions (n=198)..... 62

3-4 Chi-squared analysis of the effect of purchase frequency on responses to each value dimension (n=198)..... 63

4-1 Demographic profile of participants for paired preference of organic and conventional grape tomatoes and baby-cut carrots..... 75

4-2 Consumer paired preference and identification results of organic grape tomatoes and baby-cut carrots ($p < 0.05$)..... 76

4-3 Correct and incorrect identification results of organic grape tomatoes and baby-cut carrots..... 77

4-4 LPM regression analyses results for consumer preference for organic grape tomatoes and baby-cut carrots..... 78

4-5 LPM regression analyses results for the ability to correctly identify the organic grape tomatoes and baby-cut carrots..... 79

## List of Figures


2-1 HVM of non-committed organic food consumers in Edmonton (n = 23).. 43

2-2 HVM of 'internal' participants, who linked the purchase of organic foods to personal benefit..... 44

2-3 HVM of 'external' participants, who linked the purchase of organic foods to personal and societal benefits ..... 45

## Chapter 1:
## Introduction and literature review

### 1.1 What is organic food?

Organic food is grown under a production system that is designed to optimize productivity of diverse communities within the agro ecosystem, including soil organisms, plants, livestock, and people (Canadian General Standards Board, 2006). The principal goal of organic production is to develop enterprises that are suitable and harmonious with the environment (Canadian General Standards Board, 2006). This is achieved through processing restrictions that prohibit the use of chemical fertilizers, artificial pesticides, antibiotics, growth hormones, irradiation, food additives, and genetic modification (GM) (Agriculture & Agri-Food Canada, 2006).

### 1.2 The organic food market

In 2002, the global market for organic food and drink was valued at $23 billion USD with the North American market reporting the highest growth worldwide (Sahoto, 2004). In Canada, the demand for organic food has increased by 15-20% per year since the late 1990's (Saskatchewan Agriculture & Food, 2002). According to the Organic Agriculture Centre of Canada (Macey, 2007), conservative estimates put the total retail sales of organic food in Canada at just over $1 billion CAD in 2006. The average growth rate of organic food sales in Canadian supermarkets was 28% from 2005 to 2006 with 31% growth in pre-packaged products and 22% growth in fresh products; the strongest growth rate was seen in Alberta with an increase of 44% (Macey, 2007). Fruit and vegetables make up 41% of the total organic food sold in Canadian supermarkets followed by beverages (18%), packaged and prepared foods (15%), dairy and eggs (13%), breads and grains (12%), and lastly meat, fish and poultry (1%) (Macey, 2007).

The production and marketing of organic foods must be accurately responsive to consumer demands for continued growth and success of the organic food products sector. In an increasingly global marketplace, it is necessary to understand the purchase behavior of consumers in distinct geographical locations. Thus, to match products and consumers, an understanding of organic food choice is important (Audenaert & Steenkamp, 1997;

Costa, Dekker, & Jongen, 2004; Yiridoe, Bonti-Ankomah, & Martin, 2005); specifically, an understanding of consumer values and the motivations underlying organic food purchase decisions.

## 1.3 The Canadian organic food consumer

### *1.3.1 Demographic profile*

According to Cunnigham (2007), the Canadian organic food consumer is predominantly female, with a higher level of education and disposable income. This is consistent in other areas around the globe (Tregear, Dent, & McGregor, 1994; Davies, Titterington, & Cochrane, 1995; Roddy, Cowan, & Hutchinson, 1996; Schifferstein & Oude Ophuis, 1998; Williams & Hammit, 2000; Hill & Lynchehaun, 2002; Lockie, Lyons, Lawrence, & Mummery, 2002). More specifically, a regular consumer of organic food in Canada (regularly purchase organic food in a year) is likely to be female under 55 years of age or male between the ages of 34 – 54 years, university educated, have a household income over $80,000 CAD, and have teenage or school age children. Occasional organic food consumers (purchase organic food several times per year) are usually female, have a slightly lower income than the regular consumer ($60,000 – $80,000 CAD), and have children under the age of 6 (Cunnigham, 2007).

The majority of consumers buy both organic and conventional foods. In 2005, 77% of Canadians bought some organic food (Cunningham, 2007). This group of 'non-committed' consumers represents the largest consumer segment of the Canadian organic food market and are further divided into 'heavy' buyers (23%) who regularly purchase organic food in a year, 'light' buyers (22%) who purchase organic food several times per year, and 'dabblers' (27%) who purchase organic food once or twice a year (Cunningham, 2007).

### *1.3.2 Place of purchase*

The majority of organic foods are purchased at either a supermarket (47%) or a farmer's market/direct (30%) (Cunningham, 2007). The market growth rate of organic

food is very attractive to retailers and as a result, organic foods are more readily found in mainstream retail chains. Many Canadian supermarkets have embraced organic food as an area for growth and have their own private line of organic food. For example, Loblaws (Loblaws Companies Ltd., Brampton, ON) has its own President's Choice line of organic food; Save-On-Foods (Overwaitea Food Group Ltd., Vancouver, BC) has a Western Family Organics line, Sobeys (Empire Company Ltd., Stellarton, NS) a Compliments Organic line, and Safeway (Canada Safeway Ltd., Calgary, AB) an O Organics line.

Supermarkets provide the ideal organic food purchase place for consumers (Hutchins & Greenhalgh, 1997). However, the presence of both organic food and their conventional counterparts in the same store presents a choice to the consumer. If organic food is chosen over conventional food, what motivated this decision? To answer this question, it is necessary to understand purchase motives of these consumers.

## 1.4 Motivations for organic food purchase

### *1.4.1 Personal health and food safety*

A major determinant of buying organic food is concern with one's health (Tregear et al., 1994; Schifferstein & Oude Ophuis, 1998; Harper & Makatouni, 2002; Chryssohoidis & Krystallis, 2005). Societal trends have moved toward healthier eating and taking responsibility for one's own well-being (Cunningham, 2002). With health-related problems such as obesity, type 2 diabetes, and coronary heart disease on the rise, consumers are becoming more aware of the effects their eating habits have on health. Concerns about health problems such as eczema, food allergies, and personal illness (e.g. cancer) have caused consumers to convert to organic food (Hill & Lynchehaun, 2002; Padel & Foster, 2005).

Perceived food safety risks contribute to the increased consumer demand for organically grown food. Consumers of organic food cite food risk avoidance as a motive for their organic food choices (Williams & Hammitt, 2000; Harper & Makatouni, 2002; Padel & Foster, 2005). Food risks include chemical residues, antibiotics, hormones, and additives present in the food. Many consumers believe that organic foods are safer and provide greater health benefits than their conventional counterparts (Davies et al., 1995;

Williams & Hammitt, 2000; Cunnigham, 2007; Roitner-Schobesberger, Darnhofer, Somsook, & Vogl, 2008) and are willing to pay higher prices to reduce the perceived risks (Hutchins & Greenhalgh, 1997; Williams & Hammitt, 2000; Botonaki, Polymeros, Tsakiridou, & Mattas, 2006; Cunnigham, 2007).

The growing consumer demand for organic food may also be attributed to highly publicized food safety incidents such as outbreaks of avian influenza (AI, aka 'bird flu'), bovine spongiform encephalopathy (BSE, aka 'mad cow disease'), foot-and-mouth disease, *E. coli* 0157:H7, salmonellosis, and listeriosis. These events have played an important role in the increasing concern for food safety and health; consumers seek reassurance through organic food purchase (Harper & Makatouni, 2002; Hill & Lynchehaun, 2002). A survey conducted by Luczka-Bakula and Smoluk (2004) found that 60% of consumers claim that there has been a growth in health risk from food in recent years. Nearly 72% of these consumers agree that the organic food market is the safest kind of market. Williams and Hammitt (2000) reported that organic buyers perceived more risk from microbial pathogens in conventionally grown produce than in organically grown produce.

Although there is little scientific support for the common belief that organic foods are healthier and more nutritious than conventional foods, the belief that they have these properties remains strong (Roddy et al., 1996; Magnusson, Arvola, Hursti, Aberg, & Sjoden, 2001; Saba & Messina, 2003). For a comprehensive review of research comparing the nutritional quality of organic and conventional foods, see Woese, Lange, Boess, and Bogl (1997), Bourn and Prescott (2002), and Williams (2002). Williams and Hammit (2000) found that 60% of organic buyers agreed that organically grown produce is more nutritious than conventionally grown produce. The perception that organic foods are healthier than conventional foods holds true even among non-organic food consumers (Magnusson, Arvola, Hursti, Aberg, & Sjoden, 2003; Roitner-Schobesberger et al., 2008).

Children have been identified as a major influence on the decision for choosing organic food (Cunningham, 2002). Many parents buy organic food to provide food that is safe and healthy for their children (Hutchins & Greenhalgh, 1997; Thompson & Kidwell, 1998; Hill & Lynchehaun, 2002). Consumers believe that children are the most

vulnerable to long term ill effects of exposure to pesticides and additives (Miles & Frewer, 2001; Lockie, Lyons, Lawrence, & Grice, 2004).

### *1.4.2 Environmental concern*

Another motive for organic food choice is consumers' concern about the environment (Davies et al., 1995; Schifferstein & Oude Ophuis, 1998; Lockie et al., 2002; Chryssohoidis & Krystallis, 2005). Over the past two to three decades, there has been a dramatic increase in environmental awareness (Shaw, Shiu, & Clarke, 2000). This increase in awareness has contributed to the decision to buy organic food; the more environmentally concerned the individual, the more likely they are to buy organic food (Grunert & Juhl, 1995; Lockie et al., 2002; Magnusson et al., 2003). Organic buyers believe that organically grown food is better for the environment than conventionally grown food (Williams & Hammitt, 2000; Harper & Makatouni, 2002; Saba & Messina, 2003). Lockie et al. (2004) found that organic food consumers were prepared to pay a premium for foods they considered environmentally friendly; study respondents agreed that prices received by farmers were not high enough to cover costs of producing in an environmentally friendly way.

The decision to buy organic food has also been a lifestyle choice made by environmentally conscious consumers (Sriram & Forman, 1993; Davies et al., 1995). Schifferstein and Oude Ophuis (1998) found that organic food buyers were interested in nature, society, and the environment. Both buyers and non-buyers of organic food consider environmental issues to be important, however buyers are more likely to engage in environmentally-friendly behaviors such as recycling and buying environmentally-friendly detergents or cleaning agents (Tregear et al., 1994; Davies et al., 1995; Williams & Hammit, 2000).

### *1.4.3 Concern for animal welfare*

Concerns for animal welfare have influenced consumers to choose organic food (Torjusen, Lieblein, Wandel, & Francis, 2001; Harper & Makatouni, 2002; Lockie et al., 2002; Makatouni, 2002; Baker, Thompson, & Engelken, 2004; Padel & Foster, 2005).

Consumers are concerned about the way animals are treated and the places they are kept. Organic farming is perceived to improve the well-being of animals through the restricted use of hormones and antibiotics, and by providing appropriate husbandry (Makatouni, 2002; Padel & Foster, 2005). Consumers believe that the animal's quality of life has an effect on the quality of its meat – happy animals produce healthy products (Harper & Makatouni, 2002; Makatouni, 2002).

### *1.4.4 Superior quality and taste*

Other reasons for choosing organic food are the quality and taste (Fotopoulos & Krystallis, 2002; Hill & Lynchehaun, 2002; Fotopoulos, Krystallis, & Ness, 2003; Baker et al., 2004). Organic foods are sometimes perceived as a premium product; as Fotopoulos et al. (2003) found, "organic food = high quality". Many organic food consumers believe that a high price will mean better quality, and therefore better taste (Hill & Lynchehaun, 2002). This perception is not restricted to organic foods. In a study of the perception of GM foods, participants associated low price with lower quality and poor taste (Bredahl, 1999).

Although many consumers claim that organic food tastes better than their conventional counterparts (Roddy et al., 1996; Schifferstein & Oude Ophuis, 1998; Saba & Messina, 2003; Padel & Foster, 2005; Kihlberg & Risvik 2007), there is no conclusive evidence that organic foods do in fact taste better. Numerous studies have compared the taste of organic and conventional food using various sensory evaluation techniques; however, overall results are inconsistent and do not identify products from one farming system as superior in taste over another.

Studies using trained panels to compare sensory properties of organic and conventional food have found no significant differences in taste/flavor attributes (Younie, Hamilton, & Nevison, 1990; Fjelkner-Modig, Bengtsson, Stegmark, & Nystrom, 2000; Jonsall, Johansson, Lundstrom, Andersson, Nilsen, & Risvik, 2002; Walshe, Sheehan, Delahunty, Morrissey, & Kerry, 2006; Annett, Spaner, & Wismer, 2007), while other studies have found differences (Cayuela, Vidueira, Albi, & Gutierrez, 1997; Hogstad, Risvik, & Steinsholt, 1997; Haglund, Johansson, Berglund, & Dahlstedt, 1999;

Johansson, Haglund, Berglund, Lea, & Risvik, 1999). As with trained panels, studies employing triangle tests have found differences in taste/flavor to be both significant (Wszelaki, Delwiche, Walker, Liggett, Scheerens, & Kleinhenz, 2005) and not significant (Basker, 1992). Research with consumer panels evaluating preference for organic or conventional food has also yielded inconsistent results. Studies report no differences in taste preference for some products (Shutz & Lorenz, 1976; Basker, 1992; Jonsall et al., 2002; Zhao, Chambers, Matta, Loughin, & Carey, 2007), while there are taste preferences for other products (Shutz & Lorenz, 1976; Basker, 1992; Johansson et al., 1999; Annett, Muralidharan, Boxall, Cash, & Wismer, 2008).

Studies using consumer panels have evaluated preference by means of hedonic ratings or intensity scales where participants are able to rate both products equally; participants do not have to choose one product over the other. As a result, one cannot conclude, definitively, which one is preferred. Though there is no conclusive evidence that organic foods taste better, consumers perceive this to be true and are willing to pay more for them (Magnusson et al., 2003).

As described above, organic food purchases have generally been influenced by motives regarding health, the environment, animal welfare, quality and taste. However, many of the aforementioned studies have used consumer surveys to assess perceptions, attitudes, and beliefs. There are few studies that identify consumers' underlying personal values that drive organic food choice. According to Gutman (1982), values play a dominant role in guiding product choice; it is therefore worthy to investigate the values that guide organic food choice.

## 1.5 Values motivate product choice

### *1.5.1 What are values?*

According to Rokeach (1973 as cited in Gutman, 1982), values are lasting beliefs that specific modes of conduct (e.g. protecting the environment) or end-states of existence (e.g. being healthy) are personally or socially preferable to others; a person's values arise from culture, society and its institutions, and personality. Values therefore influence the way people select and justify actions and evaluate people, self, and events

(Schwartz & Bilsky, 1987; Grunert & Juhl, 1995). Consequently, values can be used to find out why people act in certain ways; more specifically, how they guide product choice. The extent to which consumers see value in a product relative to the perceived costs can be expected to motivate consumer purchases in general (Grunert, 1995).

It must be noted that behavior is not solely guided by values; there are other factors involved. Contextual factors such as place of purchase, availability, price, convenience, and presentation of products can influence purchase behavior (Harper & Makatouni, 2002; Vannoppen, Verbeke, & van Huylenbroeck, 2002; Padel & Foster, 2005). Beliefs and attitudes also impact behavior. The Theory of Planned Behavior suggests that beliefs (or subjective norms) lead to attitudes, which then lead to intention and behavior (Azjen & Fishbein, 1980 as cited in Shaw et al., 2000); it is both beliefs and attitudes that contribute to the intention to perform a behavior. However, according to Rokeach (1973 as cited in Gutman, 1982), values serve as 'standards' or models for beliefs, attitudes, and behavior; they are the underlying pre-determinants of behavior. It is commonly believed that causality flows from values through beliefs and attitudes to behavior, and not the other way around (Dreezens, Martijn, Tenbult, Kok, & de Vries, 2005a). This means that values have an impact on beliefs and attitudes, which in turn influence people's behavior.

The concept of values has received considerable attention in the area of consumer behavior and marketing. In-depth profiling of consumers and their relationship to products offers both understanding of the cognitive positioning of current products as well as assisting the development of positioning strategies for new products (Reynolds & Gutman, 1988).

### *1.5.2 Measuring values*

Predominantly, values have been measured and evaluated through quantitative techniques such as the Rokeach Value Survey (Rokeach, 1973 as cited in Gutman, 1982), the value and lifestyle (VALS) tool (Mitchell, 1983 as cited in Thyne, 2001), list of values (LOV) scale (Kahle & Kennedy, 1988 as cited in Thyne, 2001), and the Schwartz Value Survey (Schwartz & Bilsky, 1987). These methods measure personal values across

a range of predetermined dimensions. The LOV scale (Chryssohoidis & Krystallis, 2005) and the Schwartz Value Survey (Grunert & Juhl, 1995; Dreezens et al., 2005a, 2005b; Saher, Lindeman, & Hursti, 2006; Kihlberg & Risvik, 2007) have been previously used successfully to investigate values associated with organic food. Both methods however cannot indicate what characteristics of organic foods, specifically, link those values to organic foods.

In contrast to these quantitative approaches, another method, laddering, differs from the other methods in that it identifies how products are linked to values in a qualitative way. This method has been used extensively in a wide range of consumer studies. It is a technique that reveals, rather than imposes, values; it is based on the means-end chain theory.

### *1.5.3 The means-end chain (MEC) theory*

The means-end chain (MEC) theory has been proven to be very useful in understanding consumer behavior and product choice. Broadly, MEC theory focuses on how consumers think about products. More specifically, it focuses on examining the important meanings that consumers associate with the products they purchase and consume. MEC theory explains how product selection facilitates the achievement of consumers' desired end-states (or values); products are seen as a means through which certain valued ends are obtained (Gutman, 1982). The main assumption of MEC theory is that people do not buy products for the product's sake, but for the benefits that its consumption can provide (Costa et al., 2004). The theory suggests that consumers choose products with *attributes* that lead to desired *consequences*, which are determined by personal *values* (attributes → consequences → values). As Baker et al. (2004) simply state, "products have attributes, the consequences of which are sought by consumers to satisfy the core values by which they are driven." Thus, the theory assumes that purchase decisions are value-driven, that consumers' personal values ultimately influence their product choices.

It is helpful to describe the three levels of abstraction in MEC theory (Peter & Olsen, 1993, as cited in Audenaert & Steenkamp, 1997):

1) Attributes: the characteristics of a product
    - *concrete*: tangible, physical characteristics (e.g. does not contain pesticides)
    - *abstract*: intangible, subjective characteristics (e.g. tasty)
2) Consequences: refer to what the product provides the consumer
    - *functional*: directly experienced, tangible outcomes of use (e.g. I'm not ingesting pesticides)
    - *psychosocial*: more personal and less tangible outcomes of use (e.g. I'm not going to get cancer from all the pesticides)
3) Values: what the consumer is trying to achieve through purchase behavior
    - *instrumental*: cognitive representations of preferred modes of behavior (e.g. protecting the environment)
    - *terminal*: preferred end-states (e.g. being healthy)

MEC theory suggests that there is a hierarchical structure linking attributes of a product to consequences attained by product use and then to personal values held by the consumer, thus forming a chain or 'ladder' that increases in the level of abstraction (Reynolds & Gutman, 1988). To assess consumers' means-end chains, an interview technique called laddering is commonly used.

### *1.5.4 The laddering technique*

Laddering is a qualitative research technique that complements MEC theory. It aims to explore and understand the underlying values that motivate product choice and is often used in consumer research to elicit consumers' preferences towards certain products. Laddering is an in-depth, one-on-one, semi-structured interviewing technique used to develop an understanding of the associations that consumers make between product attributes and more personally relevant and abstract consequences and values (Reynolds & Gutman, 1988).

In the laddering interview, participants are asked what attributes are relevant when choosing a particular product; the participant is then asked "why is that important to you?" When he/she answers, they are again asked "why is that important to you?" This

continues until the respondent is unable to answer (Reynolds & Gutman, 1988). This interviewing technique is called laddering because it guides the participant up the 'ladder of abstraction' from relatively concrete attributes to the more abstract consequences and personal values (Jolly, Reynolds, & Slocum, 1988). Repeated questioning will, after analysis, result in a cognitive hierarchical value map (HVM) that links product attributes to consequences of its consumption and finally to the core values that influence purchase behavior. This type of information permits an understanding of consumers' underlying personal motivations for product choice; each unique ladder from an attribute to a value is interpreted as representing dominant perceptual orientations, or 'ways of thinking', with respect to the product (Reynolds & Gutman, 1988).

Rather than forcing participants into predetermined value categories as in survey approaches, laddering allows participants to define personal values in *their own* terms and context. The meaningful associations are thus self-defined. A drawback of survey methods is that values are derived *a priori*; some values may not be important in certain situations, or some values may be neglected. With laddering, values are derived inductively through questioning the participant. It is unlikely that irrelevant values are identified or salient ones missed (Bagozzi & Dabholkar, 1994). It is in this way that laddering facilitates a consumer-oriented approach to understanding personal values that drive product choice.

### *1.5.5 Studies adopting the laddering technique*

Laddering has been widely used in research on a variety of topics to develop a better understanding of the factors influencing consumer choice or decision-making behavior. It has been used in previous research to understand the factors involved in choosing a school (Klenosky, Templin, & Troutman, 2001), purchasing a greeting card (Walker & Olson, 1991), selecting a ski destination (Klenosky, Gengler, & Mulvey, 1993), buying a tennis racket (Mulvey, Olson, Celsi, & Walker, 1994), and giving a performance appraisal (Jolly et al., 1988). Other research has applied laddering to understand the factors driving weight loss (Pieters, Baumgartner, & Allen, 1995), recycling behavior (Bagozzi & Dabholkar, 1994), participation in a ropes course program

(Goldenberg, Klenosky, O'Leary, & Templin, 2000), and visiting a museum (Jansen-Verbeke & van Rekom, 1996; Thyne, 2001).

In the food domain, the laddering approach has provided insight into consumer perceived differences among several products of the same category and motivations for product choice (Audenaert & Steenkamp, 1997; Nielson, Bech-Larsen, & Grunert, 1998; Bredahl, 1999; Grunert, Lahteenmaki, Neilsen, Poulsen, Ueland, & Astrom, 2001; Urala & Lahteenmaki, 2003; Roininen, Fillion, Kilcast, & Lahteenmaki, 2004; Roininen, Arvola, & Lahteenmaki, 2006; Lind, 2007). Cultural differences motivating food product choice (Nielson et al., 1998; Bredahl, 1999; Grunert et al., 2001; Baker et al., 2004) as well as differences in food product choice between consumer groups have been studied using this approach (Baker, Thompson, & Palmer-Barnes, 2002; Vannoppen, et al., 2002; Fotopoulos et al., 2003; Roininen et al., 2004).

Laddering has also been used to explore motivations behind consumer choices for alternative foods such as GM foods (Bredahl, 1999; Grunert et al., 2001), functional foods (Urala & Lahteenmaki, 2003), fair trade (FT) foods (de Ferran & Grunert, 2007) and organic foods (Makatouni, 2002; Fotopoulos et al., 2003; Baker et al., 2004; Padel & Foster, 2005).

With respect to organic foods, Fotopoulos et al. (2003) conducted 49 laddering interviews, consisting of 28 organic food consumers and 21 non-organic food consumers in Greece, to understand purchase motivations for wine, in general, and organic wine. The most important value motivating wine purchase was 'searching for pleasure in life' found in both groups of consumers indicating that pleasure is the rationale behind wine consumption, regardless of the production method. 'Healthiness-long life' was also found to be important in both groups however, the ladders leading to 'healthiness-long life' differed between the organic and non-organic food consumers. Despite this finding, the researchers conclude that "healthiness as a purchasing motive does not differentiate satisfactorily between organic buyers and non-buyers." 'Environmental consciousness' was important for both groups however this stemmed from the attribute of 'bottle recycling' rather than from anything about the wine being organically produced.

In the UK, Makatouni (2002) interviewed 40 organic food consumers using the laddering method to uncover the personal values that motivate organic food purchase.

Values were found to center on three broad categories: human health and well-being, animals' well-being, and the environment. Better health, for either themselves or their family, was the main motivation for the purchase of organic food followed by improved animal well-being and then protection for the environment. The most popular ladder was '[no] pesticides' (attribute) → 'like eating it' (consequence) → 'responsibility for family and self well-being and health' (value). The absence of pesticides also led to the value of protection for the environment.

Also in the UK, Padel and Foster (2005) explored the values that underlie consumers' purchasing decisions for organic food by means of 12 focus groups and 85 laddering interviews of organic food consumers. Results of the laddering interviews revealed the value of personal health as the main motivation for buying organic food followed by concern for the environment; other values included well-being and quality of life. Secondary reasons for buying organic food were animal welfare, taste, and local/regional products. Most participants associated the lack of pesticide use with 'natural production' which then led to the end value of 'personal health'; the lack of pesticides use also led to the end value of 'protection of the environment'.

Baker et al. (2004) used laddering to explore and compare the underlying values driving the decision to purchase organic food in the UK and Germany. They found the HVM's of the German and UK participants contained similar consequences and values, but different attributes were mentioned leading to significantly different value chains. Values concerned with health, well-being, and enjoyment of life were similar between the German and UK participants, yet the product attributes sought in order to achieve these values were completely different. In the UK, 'healthiness' and 'not genetically modified' were important attributes whereas in Germany, 'taste' and 'quality' were important. The most noticeable difference between the two groups was the absence of the connection of organic foods and the environment in the UK group; this group did not acknowledge nature or the environment at all. This finding is interesting considering that both Makatouni (2002) and Padel and Foster (2005) found that UK consumers linked organic foods and the environment. However, these studies were conducted in different locations throughout the UK. This illustrates that organic food consumers differ from place to place, even within the same geographical area. Differences may be due to contextual

factors that may have an important influence on when, why, and how consumers buy organic food; these factors however, are not addressed here.

The studies described above provide valuable insight for understanding the organic food consumer. Although results regarding organic food purchase motives are similar between the laddering studies and consumer surveys, an important difference exists. Laddering identifies how organic foods are linked to consumer values; it reveals how attributes of organic food and the consequences of its consumption satisfy the underlying personal values that drive organic food choice. As Lockie et al. (2004) point out: "concern for health is very much a universal value that few people are unlikely to claim as unimportant to their decisions regarding food". Laddering therefore presents an advantage over survey methods. It can indicate what organic consumers perceive to be different between organic and conventional foods and how this difference is related to their values (e.g. health).

### 1.6 Limitations to previous research

Although much research has been done examining reasons for organic food choice, it has generally been completed in other areas of the world, particularly in Europe; remarkably few studies have been completed in Canada. As indicated earlier, the demand for organic food in Canada is increasing by 15-20% per year (Saskatchewan Agriculture & Food, 2002). It is therefore necessary to understand the purchase motives for organic food in Canada.

Most of the research studies that investigate organic food purchase motives consist of consumer surveys that report relatively simple findings. The main drawbacks of survey methods are that motives are pre-determined and they fail to provide insight into the underlying reasons for product choice. Laddering on the other hand, provides a rich understanding of consumer values that are the basis for their purchase decisions. Laddering focuses on the *how* and *why* products are important by enabling attributes of a product to be linked to personal values. This would be difficult to determine in a survey as participants are limited to answering questions with specific responses.

Overall, results of studies comparing taste superiority between organic and conventional foods are inconsistent which may be in part due to the choice of sensory test method. Employing the sensory evaluation technique of paired preference, where participants are forced to choose which product they prefer, would be more useful in determining consumer preference for organic or conventional food products.

The future of the Canadian organic market depends, to a large extent, on consumer demand. It is therefore important to obtain greater knowledge and understanding of the Canadian organic food consumer.

### 1.7 Research objectives

The research objectives were:

1) to explore the important attributes and perceived benefits of organic food and to identify underlying values that drive organic food purchase of non-committed organic food consumers (buy both organic and conventional food) using the laddering technique (Chapter 2)
2) to assess the strength of the values found above in a larger sample of organic and non-organic food consumers using a questionnaire derived from results of the laddering interviews (Chapter 3)
3) to determine consumer preference for organic or conventional grape tomatoes and baby-cut carrots using the paired preference sensory evaluation technique (Chapter 4)

**1.8 Literature cited**


Annett, L. E., Spaner, D., & Wismer, W. V. (2007). Sensory profiles of bread made from paired samples of organic and conventionally grown wheat grain. *Journal of Food Science, 72*(4), 254-260.

Annett, L. E., Muralidharan, V., Boxall, P. C., Cash, S. B., & Wismer, W. V. (2008). Influence of health and environmental information of hedonic evaluation of organic and conventional bread. *Journal of Food Science, 73*(4), 50-57.

Agriculture & Agri-Food Canada. (2006). Canada's agriculture, food and beverage industry. http://atn-riae.agr.ca

Audenaert, A., & Steenkamp, J. E. M. (1997). Means-end chain theory and laddering in agricultural marketing research. In B. Wierenga, A. van Tilburg, K. Grunert, J. Steenkamp & M. Wedel (Eds.), *Agricultural marketing and consumer behavior in a changing world* (pp. 217-230). USA: Kluwer Academic Publishers.

Bagozzi, R. P., & Dabholkar, P. A. (1994). Consumer recycling goals and their effect on decisions to recycle: A means-end chain analysis. *Psychology & Marketing, 11*(4), 313-340.

Baker, S., Thompson, K. E., & Engelken, J. (2004). Mapping the values driving organic food choice: Germany vs the UK. *European Journal of Marketing, 38*(8), 995-1012.

Baker, S., Thompson, K. E., & Palmer-Barnes, D. (2002). Crisis in the meat industry: A values-based approach to communications strategy. *Journal of Marketing Communications, 8*(1), 19-30.

Botonaki, A., Polymeros, K., Tsakiridou, E., & Mattas, K. (2006). The role of food quality certification on consumers' food choices. *British Food Journal, 108*(2), 77-90.

Basker, D. (1992). Comparison of taste quality between organically and conventionally grown fruits and vegetables. *American Journal of Alternative Agriculture, 7*(3), 129-136.

Bourn, D., & Prescott, J. (2002). A comparison of the nutritive value, sensory qualities, and food safety of organically and conventionally produced foods. *Critical Reviews of Food Science and Nutrition, 42*(1), 1-34.

Bredahl, L. (1999). Consumers' cognitions with regard to genetically modified food: Results of a qualitative study in four countries. *Appetite, 33*(3), 343-360.

Canadian General Standards Board. (2006). Organic production systems general principles and management standards. http://www.pwgsc.gc.ca

Cayuela, J. A., Vidueira, J. M., Albi, M. A., & Gutierrez, F. (1997). Influence of the ecological cultivation of strawberries (*Fragaria* x *Ananassa* Cv. Chandler) on the quality of the fruit and on their capacity for conservation. *Journal of Agriculture and Food Chemistry, 45*, 1736-1740.

Chryssohoidis, G. M., & Krystallis, A. (2005). Organic consumers' personal values research: Testing and validating the list of values (LOV) scale and implementing a value-based segmentation task. *Food Quality and Preference, 16*(7), 585-599.

Costa, A., Dekker, M., & Jongen, W. (2004). An overview of means-end theory: Potential application in consumer-oriented food product design. *Trends in Food Science & Technology, 15*(7/8), 403-415.

Cunningham, R. (2002). *Canadian natural and organic retail markets*. Alberta: Alberta Agriculture and Food Publication.

Cunningham, R. (2007). *Farm to fork: Organics in Alberta*. Alberta: Alberta Agriculture and Food Publication.

Davies, A., Titterington, A. J., & Cochrane, C. (1995). Who buys organic food? A profile of the purchasers of organic food in Northern Ireland. *British Food Journal, 97*(10), 17-23.

de Ferran, F., & Grunert, K. G. (2007). French fair trade coffee buyers' purchasing motives: An exploratory study using means-end chains analysis. *Food Quality and Preference, 18*(2), 218-229.

Dreezens, E., Martijn, C., Tenbult, P., Kok, G., & de Vries, N. K. (2005a). Foods and values: An examination of values underlying attitudes toward genetically modified and organically grown food products. *Appetite, 44*(1), 115-122.

Dreezens, E., Martijn, C., Tenbult, P., Kok, G., & de Vries, N. K. (2005b). Food and the relation between values and attitude characteristics. *Appetite, 45*(1), 40-46.

Fjelkner-Modig, S., Bengtsson, H., Stegmark, R., & Nystrom, S. (2000). The influence of organic and integrated production on nutritional, sensory and agricultural aspects of vegetable raw materials for food production. *Acta Agriculturae Scandinavica, Sec B, Soil and Plant Science, 50*, 102-113.

Fotopoulos, C., & Krystallis, A. (2002). Purchasing motives and profile of the Greek organic consumer: A countrywide survey. *British Food Journal, 104*(9), 730-765.

Fotopoulos, C., Krystallis, A., & Ness, M. (2003). Wine produced by organic grapes in Greece: Using means-end chains analysis to reveal organic buyers' purchasing motives in comparison to the non-buyers. *Food Quality and Preference, 14*(7), 549-566.

Goldenberg, M. A., Klenosky, D. B., O'Leary, J. T., & Templin, T. J. (2000). A means-end investigation of ropes course experiences. *Journal of Leisure Research, 32*(2), 208-224.

Grunert, K. G., Lahteenmaki, L., Neilsen, N. A., Poulsen, J. B., Ueland, O., & Astrom, A. (2001). Consumer perceptions of food products involving genetic modification: Results from a qualitative study in four Nordic countries. *Food Quality and Preference, 12*(8), 527-542.

Grunert, K. G. (1995). Food quality: A means-end perspective. *Food Quality and Preference, 6*(3), 171-176.

Grunert, S. C., & Juhl, H. J. (1995). Values, environmental attitudes, and buying of organic foods. *Journal of Economic Psychology, 16*(1), 39-62.

Gutman, J. (1982). A means-end chain model based on consumer categorization processes. *Journal of Marketing, 46*(2), 60-72.

Haglund, A., Johansson, L., Berglund, L., & Dahlstedt, L. (1999). Sensory evaluation of carrots from ecological and conventional growing systems. *Food Quality and Preference, 10*(1), 23-29.

Harper, G. C., & Makatouni, A. (2002). Consumer perception of organic food production and farm animal welfare. *British Food Journal, 104*(3/4/5), 287-299.

Hill, H., & Lynchehaun, F. (2002). Organic milk: Attitudes and consumption patterns. *British Food Journal, 104*(7), 526-542.

Hogstad, S., Risvik, E., & Steinsholt, K. (1997). Sensory quality and chemical composition in carrots: A multivariate study. *Acta Agriculturae Scandinavica, Sec B, Soil and Plant Science, 47*(4), 253-264.

Hutchins, R. K., & Greenhalgh, L. A. (1997). Organic confusion: Sustaining competitive advantage. *British Food Journal, 99*(9), 336-338.

Jansen-Verbeke, M., & van Rekom, J. (1996). Scanning museum visitors: Urban tourism marketing. *Annals of Tourism Research, 23*(2), 364-375.

Johansson, L., Haglund, A., Berglund, L., Lea, P., & Risvik, E. (1999). Preference for tomatoes, affected by sensory attributes and information about growth conditions. *Food Quality and Preference, 10*(4/5), 289-298.

Jolly, J. P., Reynolds, T. J., & Slocum, J. W. (1988). Application of the means-end theoretic for understanding the cognitive bases of performance appraisal. *Organizational Behavior and Human Decision Processes, 41*(2), 153-179.

Jonsall, A., Johansson, L., Lundstrom, K., Andersson, A. N., Nilsen, A. N., & Risvik, E. (2002). Effects of genotype and rearing system on sensory characteristics and preference for pork (*M. longissimus dorsi*). *Food Quality and Preference, 13*(2), 73-80.

Kihlberg, I., & Risvik, E. (2007). Consumers of organic foods: Value segments and liking of bread. *Food Quality and Preference, 18*(3), 471-481.

Klenosky, D. B., Gengler, C. E., & Mulvey, M. S. (1993). Understanding the factors influencing ski destination choice: A means-end analytic approach. *Journal of Leisure Research, 25*(4), 362-379.

Klenosky, D. B., Templin, T. J., & Troutman, J. A. (2001). Recruiting student athletes: A means-end investigation of school-choice decision making. *Journal of Sport Management, 15*(2), 95-106.

Lind, L. W. (2007). Consumer involvement and perceived differentiation of different kinds of pork: A means-end chain analysis. *Food Quality and Preference, 18*(4), 690-700.

Lockie, S., Lyons, K., Lawrence, G., & Grice, J. (2004). Choosing organics: A path analysis of factors underlying the selection of organic food among Australian consumers. *Appetite, 43*(2), 135-146.

Lockie, S., Lyons, K., Lawrence, G., & Mummery, K. (2002). Eating 'green': Motivations behind organic food consumption in Australia. *Sociologia Ruralis, 42*(1), 23-40.

Luczka-Bakula, W., & Smoluk, J. (2004). The perception of Polish organic food consumer. http://orgprints.org/3943/01/3943.pdf

Macey, A. (2007). *Retail sales of certified organic food products, in Canada, in 2006.* Nova Scotia: OACC Publication.

Magnusson, M. K., Arvola, A., Hursti, U. K. K., Aberg, L., & Sjoden, P. O. (2001). Attitudes towards organic foods among Swedish consumers. *British Food Journal, 103*(3), 209-227.

Magnusson, M. K., Arvola, A., Hursti, U. K. K., Aberg, L., & Sjoden, P. O. (2003). Choice of organic foods is related to perceived consequences for human health and to environmentally friendly behavior. *Appetite, 40*(2), 109-117.

Makatouni, A. (2002). What motivates consumers to buy organic food in the UK? Results from a qualitative study. *British Food Journal, 104*(3/4/5), 345-352.

Miles, S., & Frewer, L. J. (2001). Investigating specific concerns about different food hazards. *Food Policy, 12*(1), 47-61.

Mulvey, M. S., Olson, J. C., Celsi, R. L., & Walker, B. A. (1994). Exploring the relationships between means-end knowledge and involvement. *Advances in Consumer Research, 21*, 51-57.

Nielsen, N. A., Bech-Larsen, T., & Grunert, K. G. (1998). Consumer purchase motives and product perceptions: A laddering study on vegetable oil in three countries. *Food Quality and Preference, 9*(6), 455-466.

Padel, S., & Foster, C. (2005). Exploring the gap between attitudes and behaviour: Understanding why consumers buy or do not buy organic food. *British Food Journal, 107*(8), 606-625.

Pieters, R., Baumgartner, H., & Allen, D. (1995). A means-end chain approach to consumer goal structures. *International Journal of Research in Marketing, 12*(3), 227-244.

Reynolds, T. J., & Gutman, J. (1988). Laddering theory, method, analysis, and interpretation. *Journal of Advertising Research, 28*(1), 11-31.

Roddy, G., Cowan, C. A., & Hutchinson, G. (1996). Consumer attitudes and behaviour to organic foods in Ireland. *Journal of International Consumer Marketing, 9*(2), 41-63.

Roininen, K., Arvola, A., & Lahteenmaki, L. (2006). Exploring consumers' perceptions of local food with two different qualitative techniques: Laddering and word association. *Food Quality and Preference, 17*(1/2), 20-30.

Roininen, K., Fillion, L., Kilcast, D., & Lahteenmaki, L. (2004). Exploring difficult textural properties of fruit and vegetables for the elderly in Finland and the United Kingdom. *Food Quality and Preference, 15*(6), 517-530.

Roitner-Schobesberger, B., Darnhofer, I., Somsook, S., & Vogl, C. (2008). Consumer perceptions of organic foods in Bangkok, Thailand. *Food Policy, 33*(2), 112-121.

Saba, A., & Messina, F. (2003). Attitudes towards organic foods and risk/benefit perception associated with pesticides. *Food Quality and Preference, 14*(8), 637-645.

Saher, M., Lindeman, M., & Hursti, U. K. K. (2006). Attitudes towards genetically modified and organic foods. *Appetite, 46*(3), 324-331.

Sahoto, A. (2004). Overview of the global market for organic food and drink. In H. Willer & M. Yussefi (Eds.), *The world of organic agriculture: statistics and emerging trends 2004* (pp. 21-26). Germany: IFOAM Publication.

Saskatchewan Agriculture and Food. (2005). Organics: Overview 2005. http://www.agr.gov.sk.ca/docs/processing/organics/OrganicsSector.asp

Schifferstein, H. N. J., & Oude Ophuis, P. A. M. (1998). Health-related determinant of organic food consumption in the Netherlands. *Food Quality and Preference, 9*(3), 119-133.

Schutz, H. G., & Lorenz, O. A. (1976). Consumer preferences for vegetables grown under "commercial" and "organic" conditions. *Journal of Food Science, 41*(1), 70-73.

Schwartz, S. H., & Bilsky, W. (1987). Toward a universal psychological structure of human values. *Journal of Personality and Social Psychology, 53*(3), 550-562.

Shaw, D., Shiu, E., & Clarke, I. (2000). The contribution of ethical obligation and self-identity to the Theory of Planned Behaviour: An exploration of ethical consumers. *Journal of Marketing Management, 16*(8), 879-894.

Sriram, V., & Forman, A. M. (1993). The relative importance of products' environmental attributes: A cross-cultural comparison. *International Marketing Review, 10*(3), 51-70.

Thompson, G. D., & Kidwell, J. (1998). Explaining the choice of organic produce: cosmetic defects, prices, and consumer preference. *American Journal of Agricultural Economics, 80*(2), 277-287.

Thyne, M. (2001). The importance of values research for nonprofit organizations: The motivation-based values of museum visitors. *International Journal of Nonprofit and Voluntary Sector Marketing, 6*(2), 116-130.

Torjusen, H., Lieblein, G., Wandel, M., & Francis, C. A. (2001). Food system orientation and quality perception among consumers and producers of organic food in Hedmark County, Norway. *Food Quality and Preference, 12*(3), 207-216.

Tregear, A., Dent, J. B., & McGregor, M. J. (1994). The demand for organically-grown produce. *British Food Journal, 96*(4), 21-25.

Urala, N., & Lahteenmaki, L. (2003). Reasons behind consumers' functional food choices. *Nutrition & Food Science, 33*(4), 148-158.

Vannoppen, J., Verbeke, W., & Huylenbroeck, G. V. (2002). Consumer value structures towards supermarket versus farm shop purchase of apples from integrated production in Belgium. *British Food Journal, 104*(10), 828-844.

Walker, B. A., & Olson, J. C. (1991). Means-end chains: Connecting products with self. *Journal of Business Research, 22*(2), 111-118.

Walshe, B. E., Sheehan, E. M., Delahunty, C. M., Morrissey, P. A., & Kerry, J. P. (2006). Composition, sensory and shelf life stability analyses of *Longissimus dorsi*

muscle from steers reared under organic and conventional production systems. *Meat Science, 73*(2), 319-325.

Williams, C. M. (2002). Nutritional quality of organic food: Shades of grey or shades of green? *Proceedings of the Nutritional Society, 61*, 19-24.

Williams, P. R. D., & Hammitt, J. K. (2000). A comparison of organic and conventional fresh produce buyers in the Boston area. *Risk Analysis, 20*(5), 735-746.

Woese, K., Lange, D., Boess, C., & Bogl, K. W. (1997). A comparison of organically and conventionally grown foods: Results of a review of the relevant literature. *Journal of the Science of Food and Agriculture, 74*(3), 281-293.

Wszelaki, A. L., Delwiche, J. F., Walker, S. D., Liggett, R. E., Scheerens, J. C., & Kleinhenz, M. D. (2005). Sensory quality and mineral and glycoalkaloid concentrations in organically and conventionally grown redskin potatoes (*Solanum tuberosum*). *Journal of the Science of Food and Agriculture, 85*(5), 720-726.

Yiridoe, E. K., Bonti-Ankomah, S., & Martin, R. C. (2005). Comparison of consumer perceptions and preference toward organic versus conventionally produced foods: A review and update of the literature. *Renewable Agriculture and Food Systems, 20*(4), 193-205.

Younie, D., Hamilton, M., & Nevison, I. (1990). Sensory attributes of conventional and organic beef. *Animal Production, 50*(3), 565-566.

Zhao, X., Chambers, E., Matta, Z., Loughin, T. M., & Carey, E. E. (2007). Consumer sensory analysis of organically and conventionally grown vegetables. *Journal of Food Science, 72*(2), 87-91.

**Chapter 2:**
**Values motivating the purchase of organic food by non-committed organic food consumers: A laddering analysis**

## 2.1 Introduction

Consumer demand for organic food is growing around the globe (Sahoto, 2004). In 2002, the North American market for organic food had the highest growth worldwide (Sahoto, 2004). According to the Organic Agriculture Centre of Canada (Macey, 2007), conservative estimates put the total retail sales of organic food in Canada at just over $1 billion CAD in 2006. Considering the increase in demand for organic foods, an understanding of organic food choice is important for the Canadian organic food industry; specifically, an understanding of consumer values and the motivations underlying organic food purchase decisions.

In 2005, 77% of Canadians bought some organic food (Cunningham, 2007). This group of 'non-committed' consumers represents the largest consumer segment of the Canadian organic food market and are further divided into 'heavy' buyers (23%) who regularly purchase organic food in a year, 'light' buyers (22%) who purchase organic food several times per year, and 'dabblers' (27%) who purchase organic food once or twice a year (Cunningham, 2007).

The rapid growth of organic food sales may be attributed to several factors. Organic food purchases have generally been driven by motives regarding health, the environment, and animal welfare issues; taste and quality are also important factors (Davies, Titterington, & Cochrane, 1995; Schifferstein & Oude Ophuis, 1998; Williams & Hammitt, 2000; Harper & Makatouni, 2002; Hill & Lynchehaun, 2002; Lockie, Lyons, Lawrence, & Mummery, 2002; Magnusson, Arvola, Hursti, Aberg, & Sjoden, 2003; Saba & Messina, 2003; Padel & Foster, 2005).

Although many studies have investigated motives for organic food choice, there are few published studies of Canadian consumers. Studies have generally been completed in other areas of the world and consist largely of consumer surveys that assess perceptions, attitudes and beliefs. There are few studies that identify the underlying personal values that drive organic food purchase decisions. Values serve as 'standards' or models for beliefs, attitudes, and behavior; they are the underlying pre-determinants of

behavior (Rokeach, 1973 as cited in Gutman, 1982). According to Gutman (1982), values play a dominant role in guiding product choice; it is therefore worthy to investigate the values that guide organic food choice.

Laddering has been used extensively in a wide range of consumer studies to explore and understand the underlying values that motivate product choice. Laddering is an in-depth, one-on-one, semi-structured interviewing technique used to develop an understanding of the associations that consumers make between product attributes and more personally relevant and abstract consequences and values (Reynolds & Gutman, 1988). It is based on the means-end chain (MEC) theory, which explains how product selection facilitates the achievement of personal values held by the consumer (Gutman, 1982). MEC theory suggests that consumers choose products with *attributes* that lead to desired *consequences*, which are determined by personal *values* (attributes → consequences → values). The theory therefore assumes that purchase decisions are value-driven, that consumers' personal values ultimately influence their product choices.

Laddering has successfully been used in Europe to explore the values that motivate consumer choices for organic food (Makatouni, 2002; Fotopoulos, Krystallis & Ness, 2003; Baker, Thompson, & Engelken, 2004; Padel & Foster, 2005). Values were found to center mainly on personal health, the environment, and concern for animal welfare; other values included well-being and quality of life.

Although results appear similar between the laddering studies and consumer surveys, an important difference exists. Laddering identifies how organic foods are linked to consumer values; it reveals how attributes of organic food and the consequences of its consumption satisfy the underlying values that drive organic food choice.

Non-committed organic food consumers are those that do not buy organic foods exclusively. It is of interest to investigate the purchase motives of non-committed organic food consumers as it is this group that represents the largest consumer segment of the organic food market (Cunningham, 2007).

The objectives of this study were to explore the important attributes and perceived benefits of organic food and to identify the underlying values that drive organic food purchase of non-committed organic food consumers.

## 2.2 Methods

### *2.2.1 Participant recruitment*

Participants (n = 23) were recruited from supermarkets in Edmonton that sell both organic and conventional food. Shoppers were approached after observing them choose an organic food product. Refusal rate was approximately 35%; that is, 35% of the shoppers who were approached declined to participate. In qualitative research, the number of participants recruited is determined once saturation is reached (when no new or relevant data emerge) (Richards & Morse, 2007, p231); 18-25 participants are usually sufficient to achieve saturation. Saturation was observed after 23 interviews.

Consumers who purchase both organic and conventional food (non-committed organic food consumers) were recruited for the study. It did not matter if the participant bought organic food on a regular or occasional basis, as long as they did not only buy organic food (committed organic food consumer). All participants were responsible for purchasing groceries for their household.

### *2.2.2 Laddering interviews*

Two pilot interviews were conducted to identify and correct potential problems that may arise during the interviews. Before beginning the interview, it was emphasized that there were no right or wrong answers and that the purpose of the interview was not to check the participants' knowledge or purchase habits of organic food, but to simply understand why they preferred to buy organic food over conventional food.

The interviews began with general warm-up questions to get participants thinking about organic foods. Such questions included when they started buying organic food, what made them decide to change, and what organic foods they had purchased in the last month. Free, or direct, elicitation was used to find the starting point of the laddering portion of the interview; participants were asked why they preferred organic foods over the conventional counterparts. Participants were then asked to rank their answers from the most important to the least important. The answer that was ranked as most important was then further probed with the question "why is that important to you?" The laddering process continued with repeated probes using the question "why is that important to

you?" after each response. Probing ended when the participant could not produce any further information. The researcher then returned to the next important answer listed and the laddering process was repeated. In some cases, the answers listed by the participant were not at the attribute level, but at the consequence or value level; reverse laddering was applied in these cases in order to determine the attributes that would lead to the more abstract consequences and values. When participants struggled to articulate an answer, one of the techniques suggested by Reynolds and Gutman (1988) was used to move the interview forward without influencing the participant. Participants were also asked if there were any negative aspects of buying organic food.

The interview concluded with general questions such as what the participant's favorite and least favorite organic foods were and why, and what kind of organic foods they would like to see in their supermarket. Lastly, the participants were asked to complete a demographic questionnaire regarding gender, age, education, income, place of organic food purchase, and frequency of organic food purchase.

Interviews were conducted at the University of Alberta between August 2007 and January 2008. Each lasted between 30-60 minutes, depending on the participant's willingness to answer and ability to express themselves. The interviews were recorded using a digital voice recorder and transcribed verbatim; notes were also taken by the researcher during the course of the interview. As compensation for their time, each participant received a $25 gift card for the supermarket from which they were recruited. The study was approved by the Faculty of Agricultural, Life and Environmental Sciences Research Ethics Board at the University of Alberta. The moderator guide and demographic questionnaire used in the interviews can be found in Appendix 1 and 2, respectively.

### *2.2.3 Data analysis*

Data were analyzed via content analysis of the transcriptions. The primary patterns of data were identified, coded, and categorized in order to facilitate interpretation. Categories were then grouped into the three basic A-C-V (attribute –

consequence – value) levels. The order, or ladders, of the A-C-V categories were recorded for each participant.

Laddermap software (version 5.4, Peffers & Gengler, 2003) was used to assist data management and analysis. Ladders from each participant were entered into the software program. An implication matrix was then created that lists the number of times each category led to another category. Two types of relationships are presented in this matrix: direct relations ($x \rightarrow y \rightarrow z$) and indirect relations ($x \rightarrow z$). Based on the results of the implication matrix, a tree diagram, called a hierarchical value map (HVM), was created by connecting all the ladders that are formed in the matrix. The map presents all of the most frequently mentioned attributes, consequences, and values connected by lines that represent participants' ladders.

It is important that an HVM is created that accurately reflects the data without becoming too complicated. A typical approach is to map all relations above a certain 'cut-off' level (minimum number of times a category is mentioned in order to be represented as a link in the map) (Reynolds & Gutman, 1988). An appropriate cut-off level is important as it determines the complexity of the map and information portrayed and thus the conclusions drawn. Specifying a high cut-off level creates a simplified map where useful information may be missed; specifying a low cut-off level creates a complicated map which may be difficult to interpret. Through trial and error, a cut-off of 4 was chosen for this study. This means that a category is represented on the HVM if at least 4 participants have mentioned it. On the map, the strength of association between attributes, consequences, and values is indicated by the thickness of the line which illustrates the number of participants that mentioned the link; a thick line indicates a strong association and a thin line indicates a weaker association.

## 2.3 Results

### *2.3.1 Sample description and organic food purchase behavior*

A total of 23 non-committed organic food consumers were recruited consisting of 15 females and 8 males (Table 2-1). The sample included all age ranges and income levels; the majority of participants had some post secondary education.

Most participants purchased organic food from the organic section of the supermarket. However, many also purchased from organic grocery stores and farmer's markets. With respect to frequency of organic food purchase, 19 participants frequently bought organic food and 4 participants sometimes bought organic food. Because people differ in the frequency they go grocery shopping, purchase frequency was self-defined by the participant.

Most participants had been buying organic food for 3 – 6 years. Many said that information in the media (newspaper articles, magazines, books, radio, television) about pesticide residues in food influenced their decision to begin buying organic food; it made them think about what they were eating and how their bodies would be affected in the long run. Others said that health problems (e.g. food allergies, cancer) and concerns about health (e.g. chemical intake and its unknown effects on health) motivated them to try organic food; they thought it was a healthier choice. Some participants were influenced by friends, while others thought it was more environmentally friendly – they were concerned about the amount of pesticide use and run-off generated by conventional farming.

When asked what their favorite organic foods were and why, most participants cited a variety of fruits and vegetables; these were favorites due to taste. Least favorite organic foods were a variety of processed foods, also due to taste. Many participants expressed that they would like an organic version of "everything" to be available in supermarkets, including more organic fair trade products as well as local organic products.

### *2.3.2 Hierarchical value maps (HVM)*

Analysis of the interview transcripts resulted in an HVM that links attributes of organic foods to consequences attained by its' consumption and then to personal values held by participants thereby forming a chain called a ladder. Figure 2-1 represents the HVM for non-committed organic food consumers in Edmonton. At the bottom of the figure, the product attributes are shown in light grey, consequences in white, and values in dark grey.

The values that motivated participants to buy organic food were found to be health, environmental concerns, ethical considerations, having a good quality of life, and feeling good about one's self. Overall, 3 dominant perceptual orientations were revealed that influence organic food choice:

1) Personal health
2) Protection of the environment
3) Social/ethical considerations

*2.3.2.1 Personal health*

The dominant value motivating organic food purchase was *personal health*. In this study, *personal health* was defined as the individual's health and the health of their family. A number of attributes were linked to *personal health*. These included *taste*, *appearance*, *nutritious*, *natural*, and the lack of *chemicals*, *growth hormones*, *additives*, and *antibiotics* (Figure 2-1).

*Taste* was an important attribute. Many participants said that organic foods tasted better than their conventional counterparts, which "taste like cardboard". Better taste was seen as a *reward* for paying the extra money – it was a bonus. Good tasting food contributed to the *enjoyment of food* which led to the values *personal health*, *feel good/doing the right thing*, *quality of life*, and *happiness*. It felt good to eat healthy food that tasted good. Some participants felt that the *appearance* of the food was an indication of the taste; if it looked good, it must taste good. Many participants believed that organic foods are more *nutritious* than conventional food. This led to the value *personal health*. Participants perceived the lack of *chemicals* and *growth hormones* made the food *natural* and therefore had better *taste* because it was "how mother nature intended".

The absence of *chemicals* (pesticides, herbicides, and fertilizers), *growth hormones*, *additives*, and *antibiotics* in organic foods were other frequently cited attributes; the lack of *chemicals* was by mentioned by all participants except one. Choosing to eat organic food was seen as a way to *control* the intake of chemicals, growth hormones, and additives. Participants felt that they were constantly exposed to these substances from their surroundings; eating organic was a way to limit the exposure

– they were *not adding more* to their body. This was important because chemicals, growth hormones, additives, and antibiotics were thought to cause *ill/unknown effects* to their *personal health*; cancer, asthma, and allergies were most often cited. Other participants were unsure what the effects of these substances were, but said they were not good for their health. By choosing organic food, participants were avoiding the *ill/unknown effects* of these substances. This was important in achieving the value *personal health*, which led to the values *feel good/doing the right thing*, *quality of life*, and *happiness*. As one participant concisely explained: "We are inundated with toxins all around us and if I can eliminate them through one source, I'm helping myself, my health…I want to be healthier and I want to live a quality life without illness" (participant 3).

*2.3.2.2 Protection of the environment*

The absence of *chemicals* and *growth hormones* in organic foods were also dominant attributes for the 2nd perceptual orientation, protection of the environment. These attributes follow a similar pathway as in the personal health orientation, but instead lead to the value *protect the environment*. Participants believed that because these substances are not used in the production of organic foods, buying organic was their way of *not adding more* to the environmental pollution that already exists. This was important because chemicals and growth hormones were believed to cause *ill/unknown effects* to the environment, namely pollution (run-off of chemicals into rivers, growth hormones passing through urine into the water supply). Through the purchase of organic food, participants were doing their part to *protect the environment*, thus leading to the value *feel good/doing the right thing*.

Some participants also recognized that protecting the environment contributed to the *sustainability* of the earth. One participant explained: "We have to save the planet if we're going to have a place to even exist...[conventional farmers] put in certain fertilizers to make a greater production. But that's on the short vision and the long vision is that it rapes the land so in the long vision that land can't survive that rape" (participant 17). Also leading to the values *protect the environment*, *feel good/doing the right thing*, and

*sustainability* was the consequence *support organic farmers*. One participant said: "I want to support the kinds of farms that I think aren't harming the environment" (participant 8).

*2.3.2.3 Social/ethical considerations*

In addition to protecting the environment, *support organic farmers* was a prominent consequence of buying organic food in the 3rd perceptual orientation, social/ethical considerations. This orientation encompasses the perception of organic food as benefiting society and the world as a whole. One participant explained that organic farming "bodes well not just for the environment, but it bodes well for communities and for people and for society in general" (participant 19).

Participants bought organic foods to support organic farmers and their farming practices; this was seen as a way to *support [the local/Canadian] economy*. It was also seen as a way of not supporting the "big corporations" and demonstrating *anti-capitalism*. Participants felt that the big corporations, namely the conventional food companies and agri-food industries, are only interested in making a profit and not interested in people. The company Monsanto was cited as an example: "Monsanto developed a seed that terminates itself…that's crazy 'cause all those people who don't have food…these seeds are only good for one season, that's not really helping our world" (participant 4). Big food corporations were not to be trusted. One participant explained: "Certain things have to be on the label and certain things don't, and if the imperative is just to make a profit, whatever corners can be cut will be cut…they're not really interested in finding out what is going to be healthy for the person…they're just going to do whatever they can to make money" (participant 11). To *support organic farmers*, participants illustrated their *anti-capitalism*, which led to the value *feel good/doing the right thing*. One participant said: "It makes me feel better…you hope you're helping society by buying organic" (participant 4).

By buying organic food, thereby supporting organic farmers, participants felt they were making a *political statement* – they were voting with their dollar. Making this statement says: "I'm supporting the culture that is pro-environment and anti-capitalist"

(participant 4). The *political statement* also indicated that the *longevity of organic food* was something they valued. Participants felt that by supporting organic farmers, they could secure the future of organic food as an alternative choice for food. As one participant explained: "There's a huge consumer statement to avoid participating in mass consumption…the big conglomerates that are producing the genetically modified canola are wiping out the small and local farmers…if we continue to buy organic [food], then they will still be a viable business…then genetically modified canola can't completely wipe out all canola…I want my kids, when they're my age, to be able to consciously choose…they [will] have available to them more than just genetically modified food or pesticide laden food or hormone induced food" (participant 10).

Participants also *support organic farmers* because they value the *ethical treatment of animals*. It was believed that on organic farms, animals are treated humanely, they are not injected with growth hormones, and they live happier lives than animals on conventional farms. Knowing that there was *ethical treatment of animals* made the participants *feel good/doing the right thing*. One participant explained that with organic meat, "you know that they lived in better conditions and probably for a longer time because if they're not given hormones, they're not going to grow as fast so it's not like the chicken lives for six weeks in a small space, and then ends up in Safeway…the chicken got to run around for a long time and eat good food and have a good life and then, I don't know, maybe four months goes by and then the chicken gets eaten, which is still kind of sad and stuff but better…you can feel better that the chicken didn't suffer it's whole life before you ate it…I feel morally good about that" (participant 11).

Two consumer profiles were revealed from the laddering interviews; those who were motivated by internal values such as personal health or feeling good about one's self, and those who were motivated by external values such as the environment or the welfare of others (both human and animals). The 'internal' participants (n=13) linked the purchase of organic foods to personal benefits. On the other hand, the 'external' participants (n=10) linked the purchase of organic foods to not only personal benefit, but to society and the world as a whole. Figures 2-2 and 2-3 represent the 'internal' and 'external' participants' HVMs, respectively. The 'external' map is more complex

containing attributes, consequences, and values that relate to the environment, animal welfare, and society.

### *2.3.3 Negative aspects of buying organic food*

There were a number of negative aspects cited of buying organic food. High price, limited availability, inconvenience, and poor appearance/shelf life were most often cited. Some participants mentioned that the higher price of organic food compared to conventional food was the main thing stopping them from eating more and/or becoming a committed organic food consumer. Participants also mentioned that the price was negative because "it deters people from just buying organic [food] products in the first place" (participant 9).

Some participants felt that the higher price is not always a barrier; they were willing to pay more in order to support the organic farmer and their farming practices. One participant explained: "When there is a price premium, basically you are making a donation to essentially a cause that you believe in…you're not just supporting the organic producer, but if you shop at [a supermarket] they're noting that your money is going towards this…and maybe your choosing organic will encourage them…[to] bring in more such products" (participant 9).

Limited availability was a negative aspect of buying organic food. Participants said that organic foods are not available in all supermarkets making them difficult to find; in the supermarkets that do carry organic food, the sections are small and the variety limited. Availability was closely associated with inconvenience, another negative aspect mentioned. One participant explained: "I'll be [at a store] and maybe they don't have organic lettuce, so then I'll have to make another stop and maybe they might not have it and then I have to drive somewhere else…It costs me to drive to 3 different places" (participant 10). Some participants were less willing to do this: "I don't always want to be running around to several different stores to find what I'm after so I will settle for non-organic just to get my groceries done" (participant 13).

Participants said that the selection of organic foods available for purchase is limited. One participant said that this "means I have less choice and I end up eating the

same things over and over…I wish there were more choices" (participant 3). Another participant mentioned the limited variety of the same product: "What's unfortunate is that there are few varieties offered of an organic product…when you try something and it doesn't work out for you, you just don't buy organic in that product anymore because it's not like you can go try their competitors because often there aren't [any]" (participant 9).

Many participants said that, compared to conventional produce, the shelf life and appearance of organic produce was poor. The short shelf life meant that it had to be consumed promptly to avoid wasting both the food and money. Some participants perceived that organic produce spoiled faster because there were no preservatives – this was a good thing. One participant said: "It doesn't last as long, you have to eat it right away…that is sort of a negative, but at the same time that makes me feel good, 'cause if this food is going bad, it actually means it's real…because they don't have the same kinds of preservatives, they go bad faster" (participant 8). Due to the short shelf life, the appearance of organic produce appeared "less than optimum". One participant explained: "organic food looks good [but] it doesn't look good all the time" (participant 1).

Another negative aspect of buying organic food, closely associated with price, was that it carried a "snob factor". One participant said: "Certain items are more expensive…being able to purchase organic food becomes like a show of status…it's sort of only for the rich and then people flaunt their grocery bags from the organic food store" (participant 8). Another participant explained how price illustrates the disparity between rich and poor: "It's a privilege of the upper-middle classes, some people can't get to be "good citizens" in this case 'cause they just don't have the income for it...[someone] who doesn't have a high-paying job doesn't get to feel ethically good about the food they eat or the food industries they support, or the food they put into their body because they just can't afford to do so" (participant 11).

The carbon footprint associated with buying organic food was cited by some participants as a negative aspect. They were aware that some organic food travels "long distances, so the environmental benefits of not growing with pesticides are being cancelled out by the environmental harm of shipping" (participant 5). Because of this, participants said that they buy organic food locally.

Some participants admitted that they were unsure what 'organic' was; there was a general lack of understanding about the standards and regulations that they felt was a negative aspect. One participant explained: "I don't know what organic means. I know it's no pesticides, no chemicals, that kind of stuff, but is it for real organic?...I don't really know if buying organic is really helping in all those positive ways that I would want it to because Earth Bound, how big are they? They're huge, so how organic are they?...They're so big, is that really giving farmers support?" (participant 4).

### *2.3.4 Perceptions about organic food production*

Participants had distinct perceptions about the production of organic food. Organic farming was seen as a small scale operation and less industrialized compared to conventional farming. Many equated local food with organic food; some participants were aware that not all local food was organic but were satisfied nonetheless. If participants knew where their food was coming from and the person who produced it, they were more likely to trust the food and accept it regardless of whether or not the farmer was certified organic. Some participants also said that "anything that's coming from [my own/friends'] garden could be considered organic" (participant 16).

Some participants said they bought organic food for the welfare of the workers involved in organic farming. They seemed to equate fair trade (FT) with organic; participants believed that an organic farm had better working conditions, paid their employees fairly, and treated their workers well in general.

An "organic ideology" was something that many participants talked about. It was perceived that the organic farmers operated under this ideology, which was comprised of supporting biodiversity, ethical treatment of humans and animals, and using environmentally friendly and sustainable farming practices; "they use means that will be replenishing the earth rather than abusing it" (participant 17). It also encompassed the work ethic of the farmers: "There's definitely more of a commitment from a farmer who's going to work their land organically than those who just use huge machinery, throw [seeds] on the ground, then come through and spray it with a bunch of crap, and then come back to gather it up at the end of the season…[organic farmers] actually have

to physically be out there to check their crops…it's harder work for the organic farmer" (participant 10). One participant said that organic farmers "value life differently…[their values] include hard work, being passionate, believing in providing natural alternatives to consumers, and laboring and benefiting from the work of their own hands" (participant 16).

**2.4 Discussion**

The laddering interviews with non-committed organic food consumers in Edmonton revealed 3 perceptual orientations that influence organic food choice: personal health, protection of the environment, and social/ethical considerations. These orientations are congruent with previous laddering studies of organic food consumers in the UK (Makatouni, 2002; Baker et al., 2004; Padel & Foster, 2005). The HVMs of these studies are also comparable to the present study. One difference however, that emerged between the present study and the previous studies is the 3rd orientation of social/ethical considerations. In the other studies, this orientation referred only to the welfare of animals, whereas in the present study, this orientation was more extensive including not only animal welfare issues, but societal issues such as capitalism and politics.

In this study, *personal health* was found as the dominant value motivating organic food choice followed by *protect the environment*. Concern for one's health and for the environment are the two most commonly stated motives for purchasing organic foods, with personal health being more important than concerns for the environment (Hill & Lynchehaun, 2002; Lockie et al., 2002; Chryssohoidis & Krystallis, 2005; Roitner-Scobesberger, Darnhofer, Somsook, & Vogl, 2008). Tregear, Dent, and McGregor (1994) found that 45% of organic food consumers surveyed bought organic produce due to concerns for their health compared to only 9% that buy due to environmental concern. Magnusson et al. (2003) suggest that health and environmental motives differ in that concern for health is regarded as egoistic (benefits the individual and their family), whereas concern for the environment is regarded as altruistic (benefits society rather than the individual). Most consumers are unwilling to give up personal

benefit to contribute to the benefit of the community (Wandel & Bugge, 1997; Magnusson et al., 2003).

The absence of *chemicals* (pesticides, herbicides, and fertilizers) was found to be the most important attribute of organic foods and linked to both health and environmental values. This is not surprising as the lack of chemical use in production is the main characteristic used to market and advertise organic foods in the media. The term 'organic' is most often defined as 'without chemicals' or 'no pesticides or fertilizers' by both organic and non-organic food consumers (Hutchins & Greenhalgh, 1997; Hill & Lynchehaun, 2002). Interestingly, only a few participants cited 'not genetically modified' as an important attribute of organic food and was therefore not represented in the HVM. Why this was the case is not entirely clear, perhaps because the issue of GM was not highly visible in the mass media at the time the interviews were conducted.

Better *taste* was another frequently cited attribute when choosing organic food. Most participants claimed that organic food tasted better than the conventional counterparts, however there were a few participants that disagreed; others admitted that it might be perceived. Although better taste is one of the main reasons for buying organic food (Davies et al., 1995; Schifferstein & Oude Ophuis, 1998; Hill & Lynchehaun, 2002; Chryssohoidis & Krystallis 2005; Roitner-Schobesberger et al., 2008), not all organic food buyers agree that there is better taste (Hill & Lynchehaun (2002). In fact, lack of improved taste is a reason for not buying organic food (Hill & Lynchehaun, 2002). In this study, *taste* contributed to the *enjoyment of food* which led to the values *personal health* and *feeling good/doing the right thing*. Lockie, Lyons, Lawrence, and Grice (2004) report that 'sensory and emotional appeal' was an important motivating factor influencing organic food consumption; it made the person feel good, physically and emotionally, and contributed to the enjoyment of the act of eating.

Consumers are exercising considerable influence in the food system by deliberately selecting or rejecting foods seen as ethical (e.g. FT) or unethical (e.g. GM) (Browne, Harris, Hofny-Collins, Pasiecznik, & Wallace, 2000). This study revealed there were both political and ethical motives underpinning the decision to purchase organic food. It was evident there were ethical concerns (environmental, social, and animal welfare) regarding conventional food companies (the "big corporations") and their

production practices; buying organic food was a deliberate, political decision. Previous studies indicate that organic food consumers are more motivated by political and ethical considerations than non-organic food consumers (Lockie et al., 2002; Padel & Foster, 2005). In focus group discussions conducted by Harper and Makatouni (2002), concerns about ethical issues such as animal welfare, fair trade, the environment, and supporting small local producers were mainly from the organic food buyers; conventional food buyers did not express any concern toward food-related ethical issues.

Political and ethical motives underlying purchase decisions are not restricted to organic foods. Participants in the present study indicated that they also purchased other environmentally-friendly/ethically produced products such as cleaning detergents, hand soap, toothpaste, and toilet paper as well as fair trade, free-range, and local food products. Shaw, Shiu, and Clarke (2000) indicate that ethical consumers do not identify with only one ethical issue, but with a range of ethical issues. Ethical consumption choices are made because ethical issues have become an important part of their self-identity and they have a desire to behave accordingly (Shaw et al., 2000); to the ethical consumer, their money is a vote which they use every time they go shopping.

This study examined non-committed organic food consumers in Edmonton and revealed 2 consumer types that differ in their motivations for organic food purchase: the 'internals' and the 'externals'. In the UK, Hill and Lynchehaun (2002) identified 'Foodies' and 'Greenies'. The 'Foodies' buy organic food due to internal reasons such as taste or health, whereas the 'Greenies' buy organic food due to external reasons such as the environment or animal welfare. Similarly in the UK, Baker et al. (2004) also found 2 consumer types; those having an 'I orientation' who buy organic because they see it as a positive benefit for themselves personally, and those who have an 'us orientation' who buy organic because they see organic foods as having a benefit for society as a whole.

Clearly, organic food consumers are not a homogenous group. For some, the purchase motive is not solely one of self-interest but is also influenced by ethical considerations. It is therefore important for the organic food industry to be aware of the different types of organic food consumers that exist and to understand their differing purchase motives if they are to successfully meet the needs of organic food consumers. It is important to know how consumers explain their interest in organic food and how that

interest is linked with their values. The organic food industry can use the results of this study as inputs when developing communication strategies based on important attributes of organic food, consequences of organic food purchase, and values of organic food consumers. The existence of multiple ladders within the HVM also highlights opportunities to employ multiple communications.

Organic food and the organic food consumer are becoming a larger part of the mainstream grocery store. Consumers want organic food to be sold in supermarkets (Hutchins & Greenhalgh, 1997), and major supermarkets are adapting to this pressure (Browne et al., 2000). It is here that the majority of organic foods are purchased (Cunningham, 2007) and where there is the highest potential for increased exposure and sales. As the presence of organic food becomes the norm in supermarkets, so too will the purchase of these products. Grankvist and Biel (2001) reported that the frequency of purchase for organic food increases as the perceived norm pressure for organic food purchase intensifies. This presents a great opportunity to attract new consumers by clearly communicating the benefits of organic food and how it relates to personal values held by the consumer.

As revealed in the present research, non-committed organic food consumers vary in the importance of underlying values that drive organic food choice. Lockie et al. (2002) indicate that both organic and non-organic food consumers share the same values that motivate food choice; however organic buyers are more motivated than non-buyers by these widely shared values. An assessment of values among organic and non-organic food consumers is therefore desirable. Values found in the present research, represented in a survey, are examined in a larger participant sample consisting of committed, non-committed, and non-organic food consumers; results are reported in Chapter 3.

## 2.5 Conclusion

The laddering interviews with non-committed organic food consumers in Edmonton revealed the personal values that motivate these consumers to purchase organic food. These values consisted of health, environmental concern, ethical considerations, having a good quality of life, and feeling good about the self. A number

of attributes and consequences of organic food and its consumption linked organic foods to these values via different ladders thus uncovering 3 dominant perceptual orientations (personal health, protection of the environment, social/ethical considerations). The laddering interviews also revealed 2 consumer profiles that differ in their motivations for organic food choice: the 'internals' who were motivated by personal benefit only, and the 'externals' who were motivated by both personal and societal benefits.

Prior research examining motives for organic food choice in Canada is limited; the findings of this study will assist the Canadian organic food industry to better understand the values that consumers hold when making food purchase decisions. Findings have implications for future organic food communication strategies by providing the ability to employ multiple messages that connect the benefits of organic food and how it relates to personal values held by the consumer. The existence of differing consumer types introduces another avenue of communication to attract new consumers.

Through improvement of communication strategies, the Canadian organic food industry can secure continued growth and success during the constant expansion of organic foods into the supermarket domain.

## 2.6 Tables

Table 2-1: Demographic profile of participants in laddering interviews (n=23)

| | Frequency | Percentage |
|---|---|---|
| Gender | | |
| Male | 8 | 35 |
| Female | 15 | 65 |
| Age range | | |
| 18-29 yrs | 3 | 13 |
| 30-39 yrs | 5 | 22 |
| 40-49 yrs | 7 | 30 |
| 50-59 yrs | 6 | 26 |
| 60-69 yrs | 1 | 4 |
| 70+ yrs | 1 | 4 |
| Education | | |
| High school graduate | 1 | 4 |
| Some university or college | 5 | 22 |
| College/university diploma/degree | 8 | 35 |
| Some post graduate university study | 3 | 13 |
| Post graduate university degree (Master's or Ph.D) | 6 | 26 |
| Annual household income (CAD)[1] | | |
| Less than $36,000 | 7 | 32 |
| $36,001 - $73,000 | 4 | 18 |
| $73,001 - $118,000 | 8 | 36 |
| More than $118,001 | 3 | 14 |
| Place of organic food purchase[2] | | |
| Organic section of supermarket | 20 | 87 |
| Organic grocery store | 16 | 70 |
| Farmer's market | 15 | 65 |
| Frequency of organic food purchase | | |
| Only | 0 | 0 |
| Frequently | 19 | 83 |
| Sometimes | 4 | 17 |
| Rarely or never | 0 | 0 |

[1]n=22

[2]participants indicated all locations from which they purchased organic food

## 2.7 Figures

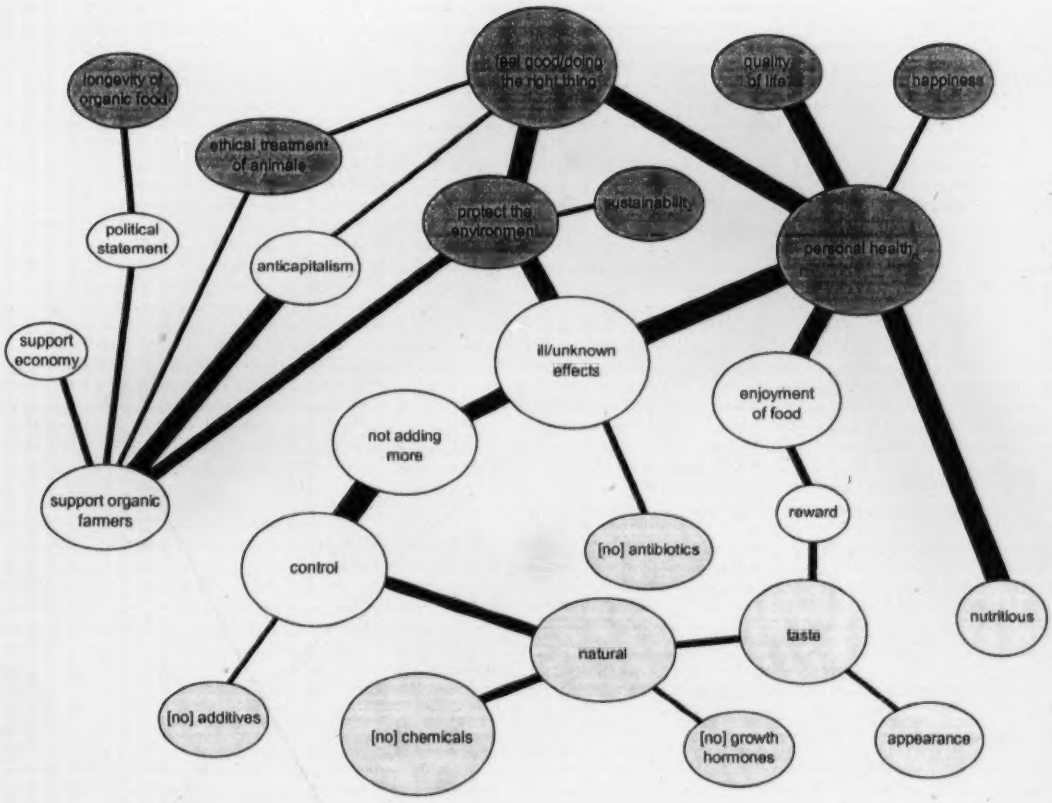


Figure 2-1: HVM of non-committed organic food consumers in Edmonton (n = 23). Attributes are shown in light grey, consequences in white, values in dark grey. The thickness of the line indicates the strength of the association.

Figure 2-2: HVM of 'internal' participants, who linked the purchase of organic foods to personal benefit (i.e. personal health).

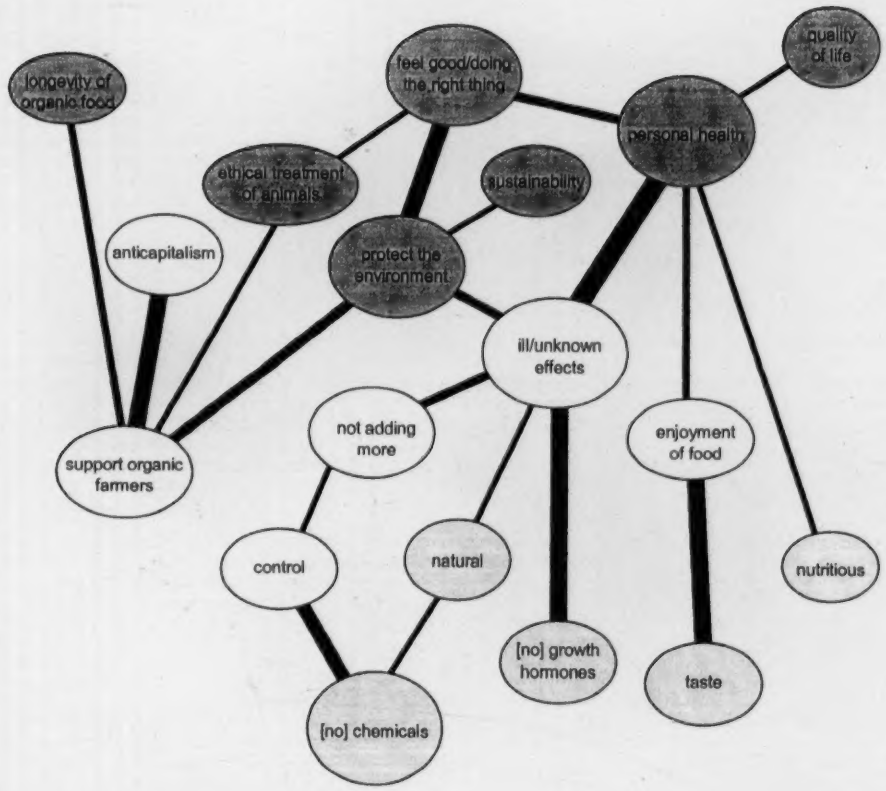


Figure 2-3: HVM of 'external' participants, who linked the purchase of organic foods to personal and societal benefits (i.e. environmental protection, social/ethical considerations).

## 2.8 Literature cited


Baker, S., Thompson, K. E., & Engelken, J. (2004). Mapping the values driving organic food choice: Germany vs the UK. *European Journal of Marketing, 38*(8), 995-1012.

Browne, A. W., Harris, P. J. C., Hofny-Collins, A. H., Pasiecznik, N., & Wallace, R. R. (2000). Organic production and ethical trade: Definition, practice and links. *Food Policy, 25*(1), 69-89.

Chryssohoidis, G. M., & Krystallis, A. (2005). Organic consumers' personal values research: Testing and validating the list of values (LOV) scale and implementing a value-based segmentation task. *Food Quality and Preference, 16*(7), 585-599.

Cunningham, R. (2007). *Farm to fork: Organics in Alberta*. Alberta: Alberta Agriculture and Food Publication.

Davies, A., Titterington, A. J., & Cochrane, C. (1995). Who buys organic food? A profile of the purchasers of organic food in Northern Ireland. *British Food Journal, 97*(10), 17-23.

Fotopoulos, C., Krystallis, A., Ness, M. (2003). Wine produced by organic grapes in Greece: Using means-end chains analysis to reveal organic buyers' purchasing motives in comparison to the non-buyers. *Food Quality and Preference, 14*(7), 549-566.

Grankvist, G., & Biel, A. (2001). The importance of beliefs and purchase criteria in the choice of eco-labeled food products. *Journal of Environmental Psychology, 21*(4), 405-410.

Gutman, J. (1982). A means-end chain model based on consumer categorization processes. *Journal of Marketing, 46*(2), 60-72.

Harper, G. C., & Makatouni, A. (2002). Consumer perception of organic food production and farm animal welfare. *British Food Journal, 104*(3/4/5), 287-299.

Hill, H., & Lynchehaun, F. (2002). Organic milk: Attitudes and consumption patterns. *British Food Journal, 104*(7), 526-542.

Hutchins, R. K., & Greenhalgh, L. A. (1997). Organic confusion: Sustaining competitive advantage. *British Food Journal, 99*(9), 336-338.

Lockie, S., Lyons, K., Lawrence, G., & Grice, J. (2004). Choosing organics: A path analysis of factors underlying the selection of organic food among Australian consumers. *Appetite, 43*(2), 135-146.

Lockie, S., Lyons, K., Lawrence, G., & Mummery, K. (2002). Eating 'green': Motivations behind organic food consumption in Australia. *Sociologia Ruralis, 42*(1), 23-40.

Macey, A. (2007). *Retail sales of certified organic food products, in Canada, in 2006.* Nova Scotia: OACC Publication.

Magnusson, M. K., Arvola, A., Hursti, U. K. K., Aberg, L., & Sjoden, P. O. (2003). Choice of organic foods is related to perceived consequences for human health and to environmentally friendly behavior. *Appetite, 40*(2), 109-117.

Makatouni, A. (2002). What motivates consumers to buy organic food in the UK? Results from a qualitative study. *British Food Journal, 104*(3/4/5), 345-352.

Padel, S., & Foster, C. (2005). Exploring the gap between attitudes and behaviour: Understanding why consumers buy or do not buy organic food. *British Food Journal, 107*(8), 606-625.

Peffers, K., & Gengler, C. (2003). How to identify new high-payoff information systems for the organization. *Communications of the ACM, 46*(1), 83-88.

Reynolds, T. J., & Gutman, J. (1988). Laddering theory, method, analysis, and interpretation. *Journal of Advertising Research, 28*(1), 11-31.

Richards, L., & Morse, J. M. (2007). *Readme first for a user's guide to qualitative methods* (2nd ed.). California: Sage Publications.

Roitner-Schobesberger, B., Darnhofer, I., Somsook, S., & Vogl, C. (2008). Consumer perceptions of organic foods in Bangkok, Thailand. *Food Policy, 33*(2), 112-121.

Saba, A., & Messina, F. (2003). Attitudes towards organic foods and risk/benefit perception associated with pesticides. *Food Quality and Preference, 14*(8), 637-645.

Sahoto, A. (2004). Overview of the global market for organic food and drink. In H. Willer & M. Yussefi (Eds.), *The world of organic agriculture: statistics and emerging trends 2004* (pp. 21-26). Germany: IFOAM Publication.

Schifferstein, H. N. J., & Oude Ophuis, P. A. M. (1998). Health-related determinants of organic food consumption in the Netherlands. *Food Quality and Preference, 9*(3), 119-133.

Shaw, D., Shiu, E., & Clarke, I. (2000). The contribution of ethical obligation and self-identity to the Theory of Planned Behaviour: An exploration of ethical consumers. *Journal of Marketing Management, 16*(8), 879-894.

Tregear, A., Dent, J. B., & McGregor, M. J. (1994). The demand for organically-grown produce. *British Food Journal, 96*(4), 21-25.

Wandel, M., & Bugge, A. (1997). Environmental concern in consumer evaluation of food quality. *Food Quality and Preference, 8*(1), 19-26.

Williams, P. R. D., & Hammitt, J. K. (2000). A comparison of organic and conventional fresh produce buyers in the Boston area. *Risk Analysis, 20*(5), 735-746.

## Chapter 3:
## An assessment of the values motivating organic food choice among committed, non-committed, and non-organic food consumers

### 3.1 Introduction

In the laddering interviews (Chapter 2), it was discovered that personal health, protection of the environment, and social/ethical considerations were important values motivating organic food purchase. The interviews also revealed that non-committed organic food consumers vary in the importance of these underlying values; personal health was more important than concerns for the environment. Political and ethical motives were evident for some consumers, yet absent for others.

The laddering study also revealed 2 consumer types that differ in their motivations for organic food purchase: the 'internals' and the 'externals'. Similarly, Hill and Lynchehaun (2002) identified the 'Foodies' who buy organic food due to internal reasons such as taste or health, and the 'Greenies' who buy organic food due to external reasons such as the environment or animal welfare. Baker et al. (2004) also found 2 consumer types; those having an 'I orientation' who buy organic because they see it as a positive benefit for themselves personally, and those who have an 'us orientation' who buy organic because they see organic foods as having a benefit for society as a whole.

It has been shown that, with regard to food choice, both buyers and non-buyers of organic food products are motivated by similar values. However, organic buyers are more motivated than non-buyers by these shared values (Lockie, Lyons, Lawrence, & Mummery, 2002). Previous studies indicate that organic food consumers are more motivated by health, environmental protection, animal welfare, and political values than non-organic food consumers (Grankvist & Biel, 2001; Harper & Makatouni, 2002; Lockie et al., 2002; Magnusson, Arvola, Hursti, Aberg, & Sjoden, 2003). Harper and Makatouni (2002) found that organic food buyers expressed concerns about ethical issues such as animal welfare, fair trade, the environment, and supporting small local producers while non-organic buyers did not express any concern toward these issues. Though these studies compare organic and non-organic food consumers, they do not indicate the level of commitment the organic buyers have to the purchase of organic food.

The Natural Marketing Institute (NMI) has identified four organic consumer groups all differing in their commitment for organic food purchase (Molyneaux, 2007). The 'Devoteds' are the most committed to organic food purchase; they strongly believe in the diet/health connection and care not only about what the product contains, but also about how it was grown. 'Temperates' buy organic food less frequently and spend less on what they do buy. They have a weaker belief system than 'Devoteds' and vary in their motivations for organic food purchase. 'Dabblers' buy organic foods "here and there" strictly based on price; health is important to them, but they do not make a habit of purchasing organic foods. 'Reluctants' do not buy organic foods and do not believe they are worth the money (Molyneaux, 2007). While this study identifies consumer groups based on their commitment to organic food purchase, it does not describe or compare the values that underlie the motivation for organic food choice by these consumer groups.

Previous research has compared the strength of values that motivate food choice by organic and non-organic food consumers (Grankvist & Biel, 2001; Harper & Makatouni, 2002; Lockie et al., 2002; Magnusson et al., 2003), while other research has compared consumers based on their level of commitment to organic food purchase (Molyneaux, 2007). Yet none, to our knowledge, have compared the strength of values motivating the purchase of organic food to the level of commitment consumers have to their organic food purchases. The strength of values motivating organic food choice may differ between committed (only buy organic food), non-committed (buy both organic and conventional food) and non-buyers. An assessment of the strength of these values among these three consumer groups is therefore desirable.

The objective of this study was to assess the strength of values motivating organic food purchase revealed in the laddering interviews in a larger sample consisting of committed, non-committed, and non-organic food consumers.

## 3.2 Methods

### *3.2.1 Questionnaire development*

Based on results from the laddering interviews (Chapter 2), statements were created to develop a questionnaire assessing the strength of values motivating organic

food purchase. Ten statements for each of the three perceptual orientations (personal health, protection of the environment, social/ethical considerations) were formulated for a total of 30 statements representing three single dimensional latent constructs. Attributes, consequences, and values most frequently mentioned in the laddering interviews were used. The aim was to create statements that expressed the ideas that were represented in the ladders; the participants' own language was used as much as possible. Statements were formulated such that participants would be able to rate them on a 5-point scale where 1 = disagree strongly, 3 = neither agree nor disagree, and 5 = agree strongly.

The questionnaire was pre-tested on 11 graduate students at the University of Alberta to identify any necessary modifications due to ambiguous wording. Upon revision, the questionnaire was piloted and tested for reliability (Cronbach's alpha) using a sample of 63 graduate and undergraduate students at the University of Alberta. Cronbach's alpha is a numerical coefficient of reliability that measures how well a set of items (or statements) measures a single dimensional latent construct (Reynaldo & Santos, 1999). Cronbach's alpha ranges in value from 0 – 1; the higher the score, the more reliable the dimension is. A reliability coefficient of 0.70 or higher is considered acceptable (Reynaldo & Santos, 1999). The output of Cronbach's alpha analysis also identifies dispensable statements by indicating that if a specific statement were to be deleted, then the value of alpha will increase. This means that removal of a specific statement from the dimension will increase the reliability of the dimension (Reynaldo & Santos, 1999). The Cronbach's alpha analysis of the piloted questionnaire suggested the removal of one statement from the environmental dimension. Table 3-1 includes the final 29 statements grouped into the three dimensions measured.

### *3.2.2 Consumer panel location, recruitment, and format*

Consumer panels were conducted in Edmonton during May 2008 to assess the strength of values revealed in the laddering interviews as well as to evaluate consumer preference of paired samples of organic and conventional grape tomatoes, baby-cut carrots, dark chocolate, and raisins. The consumer preference portion of the panel is discussed in Chapter 4. Panels were carried out at a local farmer's market, an organic

grocery store, a supermarket selling both organic and conventional foods, and at the University of Alberta. These locations were selected to ensure a sample of buyers and non-buyers of organic food; locations also ensured a well-distributed sample of consumers varying in age, income, and education.

Consumers who purchase only organic food (committed organic food consumer), both organic and conventional food (non-committed organic food consumers), and only conventional food (non-organic food consumers) were recruited for the study. Participants were given a choice of tasting one of the four food products available.

The panel consisted of two parts. In part A, participants were presented with the questionnaire and asked to rate the extent to which they agreed or disagreed with each statement. They were also given a demographic questionnaire regarding their gender, age, education, income, place of organic food purchase, and frequency of organic food purchase. In part B, all participants completed a blind taste evaluation of their chosen food product. Details of part B are presented in Chapter 4. Participants who were organic food consumers (determined from their frequency of organic food purchase on the demographic questionnaire) were also given another questionnaire regarding organic food purchase behavior; results of this questionnaire are reported elsewhere (Vanderkloet, 2008). The study was approved by the Faculty of Agricultural, Life and Environmental Sciences Research Ethics Board at the University of Alberta. The questionnaire for the present study, the demographic questionnaire, and the paired preference questionnaire can be found in Appendix 3, 4, and 5, respectively.

### *3.2.3 Data analysis*

Statements were grouped into their respective value dimensions (personal health, protection of the environment, social/ethical considerations) and those that were worded negatively reverse coded. Cronbach's alpha was calculated to determine internal reliability of each of the three dimensions within the questionnaire. Data were summarized using descriptive statistics and bivariate correlations were computed between statements within and among dimensions. Correlations between the three consumer groups (committed, non-committed, non-organic food consumers) and the three

dimensions were also computed; this was completed by calculating the sum of responses for each participant for each of the three dimensions, resulting in a single variable representing each dimension. Chi-square contingency tables were used to evaluate significant differences in response among the consumer groups for each dimension. To do this, mean values of agreement were calculated for each participant for each dimension. This resulted in a single variable representing each dimension in which the distribution for each of the five response categories (strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree) could be compared with the consumer groups (e.g. within the health dimension, how many committed participants strongly agreed with statements compared to non-committed and non-buyers). Hypotheses were as follows:

$H_o$: purchase frequency has no effect on responses to each dimension

$H_1$: purchase frequency has an effect on responses to each dimension

It is hypothesized that purchase frequency has an effect on responses to all dimensions. More specifically, both committed and non-committed consumers will respond positively (i.e. agree) to the value statements, however committed consumers will respond more strongly than non-committed; non-organic food consumers will respond negatively (i.e. disagree) or will remain neutral (i.e. neither agree nor disagree). It must be noted that non-buyers may hold these values (personal health, protection of the environment, social/ethical considerations), but they do not link buying organic food as a means to achieve these values. Data analysis was completed using SAS statistical software (version 9.1, SAS Institute Inc., Cary, NC, USA).

## 3.3 Results

### *3.3.1 Sample description*

A total of 198 participants (44% males, 55% females) completed the questionnaire (Table 3-2). The sample included all age ranges and income levels; the majority of participants had some post secondary education.

The majority of participants purchased their groceries most frequently from the supermarket; however some also purchased from organic grocery stores and farmer's markets. With respect to frequency of organic food purchase, 7% only bought organic

food, 23% frequently bought organic food and 38% sometimes bought organic food; 25% and 7% rarely or never purchased organic food, respectively. Because people differ in the frequency they go grocery shopping, purchase frequency was self-defined by the participant.

Originally, consumers who only purchase organic food were to be considered the 'committed organic food consumer' whereas those who purchase organic food frequently or sometimes would be considered as the 'non-committed organic food consumer'. However, during the consumer panel, participants indicated that it was impossible to only buy organic food as organic versions of all food products simply do not exist; participants stated that they try to buy as much organic food as they can and therefore frequently buy organic food. Consequently, participants who only or frequently purchase organic food were considered committed organic food consumers (30%) and those who sometimes purchase organic food were considered non-committed organic food consumers (38%); participants who rarely or never purchase organic food were considered non-organic food consumers (32%).

### *3.3.2 Assessment of values among committed, non-committed, and non-organic food consumers*

The three dimensions exhibited satisfactory internal reliability ($\alpha > 0.70$) as measured by Cronbach's alpha (Table 3-1). Overall, all participants responded positively to the statements in the questionnaire; mean values for statements were between 'neither agree nor disagree (3) and 'agree' (4) on the 5-point scale.

Many statements within each dimension as well as statements among dimensions were positively correlated with each other ($p < 0.01$) indicating that participants responded similarly to the statements. For example, in the health dimension, the statement 'Organic foods are more nutritious than conventional foods' was positively correlated with other statements in this dimension; it was also positively correlated with statements in the environmental and social/ethical dimensions.

Correlations between consumer groups and dimensions were significant at the 0.01 level (Table 3-3). Committed and non-committed organic food consumers were

positively correlated with each dimension; committed consumers were more positively correlated than non-committed consumers while non-buyers were negatively correlated with each dimension.

Chi-squared contingency tables between consumer groups and dimensions were significant at the 0.0001 level indicating that purchase frequency of organic food has an effect on responses to each dimension (Table 3-4). Both committed and non-committed organic food consumers responded positively ('agree' or 'strongly agree') to statements in all dimensions; they rarely disagreed with statements. Committed consumers strongly agreed with statements more often than non-committed consumers. Non-organic consumers most often neither agreed nor disagreed with statements.

All consumers strongly agreed with statements in the personal health dimension more often than with those in the environment dimension. The statements in the social/ethical dimension received the least amount of 'strongly agree' responses (Table 3-4).

**3.4 Discussion**

The questionnaire assessing the strength of values motivating organic food purchase among committed, non-committed, and non-organic food consumers revealed that organic consumers (committed and non-committed) responded more positively than non-organic consumers. The correlations and chi-squared analyses between consumer groups and dimensions suggest that the strength of motivation by health, environmental, and social/ethical values increases as the purchase frequency of organic food increases. This finding corresponds with results from previous research (Grankvist & Biel, 2001; Lockie et al., 2002; Magnusson et al., 2003).

Committed organic food consumers were motivated by health, environmental, and social/ethical values more strongly than non-committed consumers, who were motivated by these values more strongly than non-buyers. Similarly, Lockie et al. (2002) found that, although health, animal welfare, environmental protection, and political values were shared by both consumer groups, organic food consumers rated these values as more important than non-buyers. These authors suggest that the stronger motivation of organic

consumers toward these shared values is sufficient to make a difference to the willingness to act on these values. For example, a price premium for organic food presents a barrier to both organic and non-organic buyers; yet organic buyers are more willing to pay the higher price due to these stronger motivating values (Lockie et al., 2002).

Unexpectedly, non-organic food consumers did not respond negatively (i.e. disagree) with statements in the questionnaire. Instead, they either were neutral (neither agreed nor disagreed) or agreed with statements. The observation that non-buyers were neutral suggests that perhaps these consumers have not thought about organic foods and how they link to health, environmental, and social/ethical values. As mentioned earlier, both organic and non-organic food consumers share the same values that motivate food choice (Lockie et al., 2002). However, it may be that that not all consumers believe that purchasing organic food presents the only/best means through which to achieve these values. For example, Magnusson et al. (2003) report that non-buyers of organic food are more willing to perform environmentally-friendly behaviors in the area of recycling than in the area of food choice.

Non-organic food consumers largely agreed with some statements in the questionnaire. This observation suggests that these consumers have thought about organic food and how it links to health, environmental, and social/ethical values but have not changed their food purchase behavior as a means to achieve these values. Previous research indicate that non-organic food consumers agree that organic food is healthy and environmentally-friendly (Magnusson, Arvola, Hursti, Aberg, & Sjoden, 2001; Saba & Messina, 2003; Roitner-Schobesberger, Darnhofer, Somsook, & Vogl, 2008). Although non-buyers perceive organic foods as having health and environmental benefits, they have not changed their food purchase behavior. This lack of change in behavior may be due to a number of barriers. The most commonly cited reasons for not buying organic food are high price and low availability (Tregear, Dent, & McGregor, 1994; Davies, Titterington, & Cochrane, 1995; Magnusson et al., 2001; Fotopoulos & Krystallis, 2002; Harper & Makatouni, 2002; Hill & Lynchehaun, 2002; Lockie et al., 2002; Lucza-Bakula & Smoluk, 2004; Roitner-Schobesberger et al., 2008). Other factors limiting organic food purchase include inconvenience, lower quality, lack of improved taste, lack of understanding and mistrust of organic certification, and satisfaction with conventional

food (Davies et al., 1995; Fotopoulos & Krystallis, 2002; Harper & Makatouni, 2002; Hill & Lynchehaun, 2002; Lockie et al., 2002; Roitner-Schobesberger, 2008).

One of the pitfalls of using quantitative surveys to assess consumer beliefs or values is that a previously unknown belief or value presented to a participant will result in the participant learning the belief or value (Grunert & Bech-Larsen, 2005). In such a situation, the participant will likely rate the newly learnt belief or value as weak, but the problem remains that the survey has changed the participant's belief or value rather than measuring it (Grunert & Bech-Larsen, 2005). This is another plausible explanation as to why non-organic food consumers agreed with statements.

In the laddering interviews (Chapter 2), it was revealed that the dominant value motivating non-committed organic food consumers was personal health was followed by concern for the environment; social/ethical considerations were evident for some consumers, yet absent for others. Results of the present study are similar. Non-committed consumers agreed strongly with statements in the health dimension more often than statements in the environmental dimension; they did not strongly agree with any of the statements in the social/ethical dimension. In the literature, it has been found that concern for one's health and for the environment are the two most commonly stated motives for purchasing organic foods, with personal health being more important than concerns for the environment (Hill & Lynchehaun, 2002; Lockie et al., 2002; Chryssohoidis & Krystallis, 2005; Roitner-Scobesberger et al., 2008). Magnusson et al. (2003) suggest that health and environmental motives differ in that concern for health is regarded as egoistic (benefits the individual and their family), whereas concern for the environment is regarded as altruistic (benefits society rather than the individual). Most consumers are unwilling to give up personal benefit to contribute to the benefit of the community (Wandel & Bugge, 1997; Magnusson et al., 2003).

Research comparing the strength of values motivating organic food purchase to commitment level is extremely limited. The current study provides preliminary data on the differences in strength of health, environmental, and social/ethical values that motivate organic food choice among committed, non-committed, and non-organic food consumers. Future research could further investigate the strength of values that motivate organic food choice among these consumer segments.

### 3.5 Conclusion

The results of the questionnaire revealed that the strength of motivation by health, environmental, and social/ethical values increases as the purchase frequency of organic foods increases. Committed organic food consumers were motivated by health, environmental, and social/ethical values more strongly than non-committed consumers, who were motivated by these values more strongly than non-organic consumers.

The findings of this study provide preliminary data comparing the strength of values motivating organic food choice to the level of commitment consumers have to the purchase of these products.

### 3.6 Tables

Table 3-1: Value statements, Cronbach's alpha, mean ratings, and standard deviations of responses to questionnaire (n=198)

| Value statement | Cronbach's alpha | Mean[1] | Standard deviation |
|---|---|---|---|
| *Personal health* | 0.92 | | |
| My health is very important to me. | | 4.7 | 0.59 |
| Conventional foods are just as healthy as organic foods. (R)[2] | | 3.4 | 1.12 |
| Organic foods are healthier than conventional foods. | | 3.6 | 0.99 |
| Organic foods are healthier because they have no/less chemical residues than conventional foods. | | 3.9 | 0.96 |
| Organic foods are natural and therefore better for my health. | | 3.5 | 0.99 |
| Eating organic food gives me some control as to how much chemicals I ingest. | | 3.8 | 0.92 |
| Organic foods are healthier because they have no/less growth hormones, additives, and antibiotics than conventional foods. | | 3.8 | 0.91 |
| Organic foods are more nutritious than conventional foods. | | 3.4 | 1.00 |
| Conventional foods are safer to eat than organic foods. (R) | | 3.8 | 0.90 |
| Buying organic food makes me feel good about myself because I am eating healthily. | | 3.5 | 0.99 |
| *Protection of the environment* | 0.71 | | |
| The environment should be protected. | | 4.7 | 0.66 |
| The production of conventional food does not harm the environment. (R) | | 3.8 | 1.00 |
| The environment is adequately protected. (R) | | 4.1 | 0.87 |
| Organic food production practices are better for the environment than conventional practices. | | 3.9 | 0.86 |
| Organic food production is better for the environment because it uses no/less chemicals than conventional production. | | 3.9 | 0.87 |
| Organic food production is better for the environment because it uses no/less growth hormones than conventional production. | | 3.8 | 0.91 |
| Conventional farmers use sustainable farming practices. | | 2.9 | 0.98 |
| Buying organic food is not one of the things that I can do to help the environment. (R) | | 3.4 | 1.11 |
| Organic farming practices are more sustainable then conventional practices. | | 3.6 | 0.90 |

[1] rated on a 5-point scale, where 1 = strongly disagree, 3 = neither agree nor disagree, 5 = strongly agree

[2] reverse coded

Table 3-1 *(continued)*

| Value statement | Cronbach's alpha | Mean[1] | Standard deviation |
|---|---|---|---|
| *Social/ethical considerations* | 0.79 | | |
| Buying organic food is a socially conscious choice. | | 3.9 | 0.86 |
| Organic farming methods benefit communities, people, and society in general. | | 4.0 | 0.85 |
| Conventional farmers treat their livestock humanely. (R)[2] | | 3.1 | 1.06 |
| The organic food companies are only interested in making a profit. (R) | | 3.3 | 0.88 |
| Organic farmers are interested in improving society. | | 3.4 | 0.81 |
| Animals from organic farms live a better life than those from conventional farms. | | 3.4 | 0.91 |
| Big conventional food companies only care about making a profit. | | 3.8 | 0.97 |
| If everyone ate organic food, the world would be a better place. | | 3.2 | 1.07 |
| Buying organic food is a political decision. | | 3.1 | 1.05 |
| Organic farmers put more care into farming than conventional farmers. | | 3.2 | 0.98 |

[1]rated on a 5-point scale, where 1 = strongly disagree, 3 = neither agree nor disagree, 5 = strongly agree
[2]reverse coded

Table 3-2: Demographic profile of questionnaire participants (n=198)

| | Percentage (%)[1] |
|---|---|
| **Gender** | |
| Male | 44 |
| Female | 55 |
| **Age range** | |
| 18-29 yrs | 44 |
| 30-39 yrs | 18 |
| 40-49 yrs | 12 |
| 50-59 yrs | 17 |
| 60+ yrs | 9 |
| **Education** | |
| Some high school | 2 |
| High school graduate | 11 |
| Some university or college | 19 |
| College/university diploma/degree | 35 |
| Some post graduate university study | 10 |
| Post graduate university degree (Master's or Ph.D) | 23 |
| **Annual household income (CAD)** | |
| Less than $36,000 | 34 |
| $36,001 - $73,000 | 27 |
| $73,001 - $118,000 | 23 |
| More than $118,001 | 13 |
| **Place of most frequent grocery purchase[2]** | |
| Supermarket | 75 |
| Organic section of supermarket | 13 |
| Organic grocery store | 15 |
| Farmer's market | 12 |
| Other | 4 |
| **First started buying organic food** | |
| This year | 8 |
| 1-2 years ago | 23 |
| More than 2 but fewer than 5 years ago | 33 |
| At least 5 but fewer than 10 years ago | 13 |
| 10 or more years ago | 14 |
| Not applicable (non-buyer) | 7 |
| **Frequency of organic food purchase** | |
| Only | 7 |
| Frequently | 23 |
| Sometimes | 38 |
| Rarely | 25 |
| Never | 7 |

[1]there were some missing data points, thus percentages do not add up to 100

[2]participants indicated all locations from which they purchased food

Table 3-3: Correlations between organic food consumer groups and value dimensions (n=198) [1]

| | Value dimension | | |
|---|---|---|---|
| | Personal health | Protection of the environment | Social/ethical considerations |
| Organic food consumer group | | | |
| Committed[2] | 0.525 | 0.454 | 0.498 |
| Non-committed | 0.374 | 0.336 | 0.379 |
| Non-organic | -0.492 | -0.415 | -0.478 |

[1]all correlations were significant at the 0.01 level
[2]committed = only or frequently purchase organic food (n=60); non-committed = sometimes purchase organic food (n=75); non-organic = rarely or never purchase organic food (n=63)

Table 3-4: Chi-squared analysis of the effect of purchase frequency on responses to each value dimension (n=198)

| | Response (%) | | | | | |
|---|---|---|---|---|---|---|
| | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree | *p*-value |
| *Personal health* | | | | | | <.0001 |
| Committed[1] | 0 | 2 | 2 | 53 | 43 | |
| Non-committed | 0 | 3 | 31 | 56 | 11 | |
| Non-organic | 2 | 8 | 56 | 30 | 5 | |
| *Protection of the environment* | | | | | | <.0001 |
| Committed | 0 | 0 | 0 | 83 | 17 | |
| Non-committed | 0 | 0 | 24 | 72 | 4 | |
| Non-organic | 0 | 3 | 46 | 48 | 3 | |
| *Social/ethical considerations* | | | | | | <.0001 |
| Committed | 0 | 0 | 18 | 68 | 13 | |
| Non-committed | 0 | 1 | 45 | 53 | 0 | |
| Non-organic | 0 | 8 | 75 | 17 | 0 | |

[1]committed = only or frequently purchase organic food (n=60); non-committed = sometimes purchase organic food (n=75); non-organic = rarely or never purchase organic food (n=63)

### 3.8 Literature cited


Baker, S., Thompson, K. E., & Engelken, J. (2004). Mapping the values driving organic food choice: Germany vs the UK. *European Journal of Marketing, 38*(8), 995-1012.

Chryssohoidis, G. M., & Krystallis, A. (2005). Organic consumers' personal values research: Testing and validating the list of values (LOV) scale and implementing a value-based segmentation task. *Food Quality and Preference, 16*(7), 585-599.

Davies, A., Titterington, A. J., & Cochrane, C. (1995). Who buys organic food? A profile of the purchasers of organic food in Northern Ireland. *British Food Journal, 97*(10), 17-23.

Fotopoulos, C., & Krystallis, A. (2002). Purchasing motives and profile of the Greek organic consumer: A countrywide survey. *British Food Journal, 104*(9), 730-765.

Grankvist, G., & Biel, A. (2001). The importance of beliefs and purchase criteria in the choice of eco-labeled food products. *Journal of Environmental Psychology, 21*(4), 405-410.

Grunert, K. G., & Bech-Larsen, T. (2005). Explaining choice option attractiveness by beliefs elicited by the laddering method. *Journal of Economic Psychology, 26*(2), 233-241.

Harper, G. C., & Makatouni, A. (2002). Consumer perception of organic food production and farm animal welfare. *British Food Journal, 104*(3/4/5), 287-299.

Hill, H., & Lynchehaun, F. (2002). Organic milk: Attitudes and consumption patterns. *British Food Journal, 104*(7), 526-542.

Lockie, S., Lyons, K., Lawrence, G., & Mummery, K. (2002). Eating 'green': Motivations behind organic food consumption in Australia. *Sociologia Ruralis, 42*(1), 23-40.

Luczka-Bakula, W., & Smoluk, J. (2004). The perception of Polish organic food consumer. http://orgprints.org/3943/01/3943.pdf

Magnusson, M. K., Arvola, A., Hursti, U. K. K., Aberg, L., & Sjoden, P. O. (2001). Attitudes towards organic foods among Swedish consumers. *British Food Journal, 103*(3), 209-227.

Magnusson, M. K., Arvola, A., Hursti, U. K. K., Aberg, L., & Sjoden, P. O. (2003). Choice of organic foods is related to perceived consequences for human health and to environmentally friendly behavior. *Appetite, 40*(2), 109-117.

Molyneaux, M., (2007). The changing face of organic consumers. *Food Technology, 61*(11), 22-26.

Reynaldo, J., Santos, A. (1999). Cronbach's alpha: A tool for assessing the reliability of scales. *Journal of Extension, 37*(2), 1-5.

Roitner-Schobesberger, B., Darnhofer, I., Somsook, S., & Vogl, C. (2008). Consumer perceptions of organic foods in Bangkok, Thailand. *Food Policy, 33*(2), 112-121.

Saba, A., & Messina, F. (2003). Attitudes towards organic foods and risk/benefit perception associated with pesticides. *Food Quality and Preference, 14*(8), 637-645.

Tregear, A., Dent, J. B., & McGregor, M. J. (1994). The demand for organically-grown produce. *British Food Journal, 96*(4), 21-25.

Vanderkloet, J. (2008). *Organic food consumers: modeling the food choice process.* Working paper. The University of Alberta.

**Chapter 4:**
**Consumer preference for organic and conventional grape tomatoes and baby-cut carrots**

## 4.1 Introduction

Fruits and vegetables are often the first products consumers choose when they begin to buy organic food (Cunningham, 2004; Molyneaux, 2007). Consequently, produce is the largest product category in the organic food market (Cunningham, 2002). In 2006, fruits and vegetables made up 41% of the total organic food sold in Canadian supermarkets (Macey, 2007).

In the laddering interviews (Chapter 2), non-committed organic food consumers indicated that they most often buy organic produce and that it had better taste than conventional produce. Several studies in the literature indicate that 'better taste' is one of the main reasons for buying organic food (Davies, Titterington, & Cochrane, 1995; Schifferstein & Oude Ophuis, 1998; Hill & Lynchehaun, 2002; Chryssohoidis & Krystallis, 2005; Roitner-Schobesberger, Darnhofer, Somsook, & Vogl, 2008). However, a number of studies have compared the taste of organic and conventional produce by means of consumer preference panels (Shutz & Lorenz, 1976; Basker, 1992; Johansson, Haglund, Berglund, Lea, & Risvik, 1999; Zhao, Chambers, Matta, Loughin, & Carey, 2007). Overall, results are inconsistent and do not identify products from one farming system as superior in taste over another.

These studies have evaluated consumer preference by means of hedonic ratings or intensity scales where participants are able to rate both products equally; participants do not have to choose one product over the other. As a result, one cannot conclude definitively which product is preferred. Employing the sensory evaluation technique of paired preference, where participants are forced to choose which product they prefer, would be more useful in determining consumer preference for organic or conventional food products.

The objective of this study was to determine consumer preference for organic or conventional grape tomatoes and baby-cut carrots. These products were frequently identified by participants in the laddering study as having a preferred taste over their conventional counterparts.

## 4.2 Methods

### *4.2.1 Food products*

Four food products were selected for sensory evaluation: grape tomatoes, baby-cut carrots, dark chocolate pastilles, and raisins. Products were chosen based on results regarding most frequently purchased organic foods from previously conducted interviews (Chapter 2; Vanderkloet, 2008); ease of preparation, convenient serving size, and similarities in appearance between the organic and conventional counterpart were also considered. Results for the tomato and carrot evaluations are reported here; chocolate and raisin evaluation results are reported elsewhere (Vanderkloet, 2008).

Commercially available food products were used for evaluation as these products represent what is typically available to consumers. Products evaluated were: Earthbound Farm Organic Grape Cherry Tomatoes (San Juan Bautista, CA), Suncoast Sweet Grape Tomatoes (San Joaquin Valley, CA), Earthbound Farm Organic Mini Peeled Carrots (San Juan Bautista, CA), and Bolthouse Farms Baby Cut Carrots (Mulberry, FL). To represent products of similar appearance of maturity, an organic and conventional version of each of the food products were purchased from grocery stores on the same day.

### *4.2.2 Consumer panel location, recruitment, and format*

Consumer panel location, recruitment, and format are described in section 3.2.2 of Chapter 3.

### *4.2.3 Sample preparation and sensory evaluation*

Samples were distributed into 1oz. (one tomato) and 3.25oz. (one carrot) plastic containers with lids and labeled with randomized 3-digit codes.

For the evaluation, participants were seated at a table separated by white cardboard partitions to minimize outside influence and were given the paired preference sensory evaluation ballot along with their chosen food samples. On the ballot,

participants were asked to taste two samples of the food product and state which one they preferred and why. They were then told that one of the two samples was organic and were asked which one they thought it was and why. Samples were evaluated at room temperature and filtered water was provided as a palate cleanser during evaluation. Presentation order of samples was balanced to reduce potential bias due to positioning.

### *4.2.4 Data analysis*

All data were analyzed by calculating frequency of responses. Statistical significance for preference of each food product was found using Statistical Chart 3: Two-sample test, probability of $x$ or more agreeing judgments in $n$ trials (two-tailed, $p = 1/2$) (Poste, Mackie, Butler, & Larmond, 1991). It is hypothesized that there is no significant preference for either the organic or conventional version of the food product. The open-ended comments describing participants' choices for preference and identification of the perceived organic sample were coded and categorized.

Linear Probability Models (LPM) were used to examine the effect of consumer variables (commitment to organic food purchase, length of time as an organic food consumer, and consumption frequency of the food product) influencing the probability of consumers preferring the organic food sample (PrefOrg) as well as the probability of correctly identifying the organic food sample (CorrectID). An LPM is a binary response regression analysis in which binary variables (1 = event did occur, or 0 = event did not occur) are used as the dependent variable for a probit regression model where the effects are the probability of the event occurring. The binary variable, PrefOrg, was determined as follows: if participants preferred the organic sample, they received a value of 1 for PrefOrg; those who preferred the conventional sample received a value of 0. Similarly, if participants correctly identified the organic sample, they received a value of 1 for the binary variable CorrectID; those who incorrectly identified the organic sample received a value of 0. The hypothesized LPM equation used to analyze PrefOrg and CorrectID models is shown below:

$$Y = \beta_0 + \beta_1 X_I + \varepsilon$$

Where:

- $Y$ = preference for the organic food sample (PrefOrg), or correct identification of the organic food sample (CorrectID)
- $\beta_0$ = intercept term
- $\beta_1$ = coefficient indicating probability of event $Y$ occurring given $X_1$
- $X_1$ = commitment to organic food purchase, or length of time as an organic food consumer, or consumption frequency of the food product
- $\varepsilon$ = error term

It is hypothesized that:

1) Committed organic food consumers will prefer the organic sample, when sample identity is unknown, compared to non-committed or non-organic food consumers.

   Where:

   - $Y$ = PrefOrg
   - $X_1$ = commitment to organic food purchase

2) Consumers who have been buying organic foods for a longer period of time will prefer the organic sample, when sample identity is unknown, compared to those who have been buying organic foods for a shorter period of time.

   Where:

   - $Y$ = PrefOrg
   - $X_1$ = length of time as an organic food consumer

3) Committed organic food consumers will be better able to correctly identify the organic sample compared to non-committed or non-organic food consumers.

   Where:

   - $Y$ = CorrectID
   - $X_1$ = commitment to organic food purchase

4) Consumers who have been buying organic foods for longer period of time will be better able to correctly identify the organic sample compared to those who have been buying organic foods for a shorter period of time.

   Where:

   - $Y$ = CorrectID
   - $X_1$ = length of time as an organic food consumer

5) Consumers who buy the food product more often will be better able to correctly identify the organic sample compared to those who buy the food product less often.

Where:

- $Y$ = CorrectID
- $X_1$ = consumption frequency of the food product

LPM regressions were performed using SPSS statistical software (version 15.0, SPSS Inc., Chicago, IL, USA).

## 4.3 Results

### *4.3.1 Sample description*

Of the 198 participants who completed the questionnaire (Chapter 3), 44 (52% male, 45% female) and 46 (39% male, 61% female) participants completed the sensory evaluation for tomatoes and carrots, respectively (Table 4-1).

With respect to frequency of organic food purchase, 20% and 37% of tomato and carrot participants, respectively, were committed organic food consumers (only or frequently purchase organic food). Non-committed organic food consumers (sometimes buy organic food) represented 43% of tomato participants and 26% of carrot participants; 36% of tomato and 37% of carrot participants were non-organic food consumers (rarely or never purchase organic food).

### *4.3.2 Consumer preference for organic tomatoes and carrots*

Organic tomatoes were preferred over their conventional counterparts by 64% of participants; 63% of participants preferred the organic carrot (Table 4-2). However, the organic versions of these products were not significantly preferred over their conventional counterparts ($p > 0.05$). Better taste/more flavor was the main reason participants preferred the sample they chose.

After being told that one of the two samples was organic, participants were asked to identify the organic sample and to describe how they came to this conclusion. 57% and

52% of participants correctly identified the organic tomato and carrot sample, respectively (Table 4-2). Again, better taste/more flavor was the basis for deciding the sample was organic. Regardless of whether participants correctly identified the organic sample, many said the taste of the perceived organic sample was more "pure", "real", or "natural"; this was because there were no chemicals added. Other participants said there was a "richer" or "stronger" flavor because the produce "grew more slowly to allow the flavor to fully develop". Participants also used product appearance to identify the perceived organic sample. They chose the smaller sample to be organic because "less fertilizer was used".

The sample that participants preferred was usually the one they thought was organic. Of the participants who preferred the organic tomatoes, 68% correctly identified it as the organic sample (Table 4-3). For those who preferred the conventional tomatoes, 63% identified it, incorrectly, as the organic sample. Similarly, 76% of participants who preferred the organic carrots correctly identified it as the organic sample and 88% of those who preferred the conventional sample incorrectly identified it as organic.

### *4.3.3 Regression analyses*

#### *4.3.3.1 Effects on consumer preference*

None of the proposed models were significant ($p > 0.1$) for an increase in the probability of consumers preferring the organic sample in the tomato evaluation (Table 4-4). In the carrot evaluation, the model examining length of time as an organic food consumer was significant ($p = 0.008$); the coefficient for '2 – 5 years' as an organic food consumer had a significant positive effect on preference for the organic carrot ($p = 0.003$) (Table 4-4).

#### *4.3.3.2 Effects on ability to correctly identify the organic sample*

Again for the tomato evaluation, none of the proposed models were significant ($p > 0.1$) for an increase in the probability of consumers correctly identifying the organic sample (Table 4-5). For the carrot evaluation, the model analyzing length of time as an

organic food consumer was significant ($p = 0.036$); the coefficient for '2 – 5 years' as an organic food consumer had a significant positive effect on the ability to correctly identify the organic carrot sample ($p = 0.011$) (Table 4-5).

**4.4 Discussion**

The paired preference sensory evaluation revealed there was no significant difference in consumer preference for organic or conventional grape tomatoes and baby-cut carrots. These results are similar to that of previous research. Basker (1992) conducted consumer panels comparing the taste of organic and conventional tomatoes and carrots and also found no differences in taste preference. A scale from 0 to 10 was used (endpoints not stated) and mean scores were similar for organic and conventional tomatoes (6.6 and 6.6, respectively) and carrots (6.5 and 6.7, respectively).

In another consumer panel, Zhao et al. (2007) compared organic and conventional tomatoes and also found no significant differences in overall liking; both had a mean score of 7 on a 9-point hedonic scale. On the other hand, Johansson et al.'s (1999) consumer panel found a preference for the conventional tomato; whether this was statistically significant was not specified. Preference was rated on a 7-point hedonic scale (very bad = -3, very good = +3). Mean scores were 1.34 and 1.28 for the conventional and organic tomatoes, respectively.

Regarding carrots, Schutz and Lorenz (1976) found a significant preference for conventional carrots over organic carrots by participants in consumer panels (7.0 versus 6.5 on a 9-point hedonic scale). Hansen (1981) conducted consumer panels comparing biodynamic and conventional carrots and report no significant difference in preference. A scale from 1-10 was used to evaluate taste however no data are shown.

Although the present study found no difference in preference, the paired preference method employed had an advantage over other rating scale methods for the purpose of this study. The objective was to determine consumer preference of organic and conventional grape tomatoes and baby-cut carrots; paired preference explicitly asks participants to choose which sample they prefer. Rating scales allow participants to rate samples equally; they do not have to choose one sample over another. Consequently, it

cannot be definitively concluded which product is preferred. Paired preference was therefore more useful in determining consumer preference in this study.

Many participants believed the sample they preferred was organic. Previous research completed by Hansen (1981) revealed similar results: 88% of participants believed that the sample they had preferred was biodynamically rather than conventionally grown.

Better taste/more flavor was the basis for both preference and identification of the perceived organic sample. A couple of participants commented that they "assume the organic one would taste better". These observations confirm the perception or expectation that organic food tastes better than conventional food (Roddy, Cowan, & Hutchinson, 1996; Schifferstein & Oude Ophuis, 1998; Hill & Lynchehaun, 2002; Saba & Messina, 2003; Padel & Foster, 2005; Kihlberg & Risvik, 2007).

As revealed by their comments, participants' perceptions about the taste of organic food are analogous to those found in the laddering interviews. For example, in the interviews, it was perceived that the absence of chemicals in organic food made the food natural and therefore had better taste. In the present study, participants said the taste was more "pure", "real", or "natural" because there were no chemicals used in production. Participants also said that the taste "resembled cardboard" for the sample they did not prefer. This comment was also mentioned in the interviews.

The LPM regression analyses indicated that the length of time as an organic food consumer had an effect on both preference for, and identification of, the organic carrot. Consumers who have been eating organic foods for more than two years preferred the organic carrot and were better able to identify it compared to consumers who started eating organic foods in the last two years. This suggests that consumers with more experience eating organic foods have more appreciation for the way the food tastes and are more familiar with how it tastes compared to consumers who have less experience eating organic food; thus resulting in a preference for, and an enhanced ability to identify the organic sample.

On the other hand, these findings do not apply to the tomato evaluation as the proposed model was not significant. That is, length of time as an organic food consumer did not have a significant impact on preference for the organic sample or the ability to

correctly identify the organic sample. This may be due to the sample size. A total of 198 participants were recruited for the consumer panel, which consisted of a questionnaire (Chapter 3) and the sensory evaluation of four food products. All participants completed the questionnaire (n=198), then evaluated one of the four products (n≈50 for each product). The sample size for the questionnaire was sufficient, as was the sample size for the paired preference evaluations. However, further dividing the paired preference sample size to analyze effects of specific variables (e.g. length of time as an organic food consumer), resulted in very small sample sizes. Future studies examining these effects in a larger population are therefore recommended.

### 4.5 Conclusion

The results of the paired preference sensory evaluation revealed there was no significant difference in consumer preference for organic or conventional grape tomatoes and baby-cut carrots. Participants believed that the sample with better taste/more flavor was organic, thereby indicating that they perceive or expect organic food to taste better than their conventional counterparts.

The length of time as an organic food consumer had an effect on both preference for, and identification of, the organic carrot, suggesting that consumers with more experience eating organic foods have more appreciation and familiarity for the way the food tastes compared to consumers who have less experience eating organic food. This finding however, was observed in a small sample size and only for the carrot evaluation; further research is therefore recommended.

## 4.6 Tables

Table 4-1: Demographic profile of participants for paired preference of organic and conventional grape tomatoes and baby-cut carrots

| | Percentage (%)[1] | |
|---|---|---|
| | Tomatoes (n=44) | Carrots (n=46) |
| Gender | | |
| Male | 52 | 39 |
| Female | 45 | 61 |
| Age range | | |
| 18-29 yrs | 52 | 48 |
| 30-39 yrs | 16 | 17 |
| 40-49 yrs | 16 | 11 |
| 50-59 yrs | 14 | 15 |
| 60+ yrs | 2 | 9 |
| Education | | |
| High school graduate | 9 | 15 |
| Some university or college | 20 | 17 |
| College/university diploma/degree | 41 | 35 |
| Some post graduate university study | 16 | 11 |
| Post graduate university degree (Master's or Ph.D) | 14 | 22 |
| Annual household income (CAD) | | |
| Less than $36,000 | 32 | 41 |
| $36,001 - $73,000 | 41 | 17 |
| $73,001 - $118,000 | 16 | 17 |
| More than $118,001 | 7 | 22 |
| Frequency of organic food purchase | | |
| Only | 5 | 7 |
| Frequently | 16 | 30 |
| Sometimes | 43 | 26 |
| Rarely | 27 | 33 |
| Never | 9 | 4 |
| First started buying organic food | | |
| This year | 14 | 11 |
| 1-2 years ago | 20 | 20 |
| More than 2 but fewer than 5 years ago | 36 | 33 |
| At least 5 but fewer than 10 years ago | 11 | 11 |
| 10 or more years ago | 7 | 17 |
| Not applicable (non-buyer) | 9 | 4 |
| Consumption frequency of food evaluated[2] | | |
| Several times per week | 11 | 41 |
| Once per week | 23 | 22 |
| Several times per month | 23 | 17 |
| Once per month | 43 | 20 |

[1]there were some missing data points, thus percentages do not add up to 100
[2]participants that never consumed the food evaluated were removed from the paired preference sensory analysis (tomatoes: n=6; carrots: n=4)

Table 4-2: Consumer paired preference and identification results of organic grape tomatoes and baby-cut carrots ($p < 0.05$)

| | Percentage (%)[1] | | | | | |
|---|---|---|---|---|---|---|
| | Tomatoes (n=44) | | | Carrots (n=46) | | |
| | Organic | Conventional | *p*-value[2] | Organic | Conventional | *p*-value |
| Sample preferred | 64 | 36 | ns | 63 | 37 | ns |
| Sample identified as organic | 57 | 43 | - | 52 | 43 | - |

[1]there were some missing data points, thus percentages do not add up to 100

[2]determined by Statistical Chart 3: Two-sample test, probability of $x$ or more agreeing judgments in $n$ trials (two-tailed, $p = 1/2$) (Poste, Mackie, Butler, & Larmond, 1991)

Table 4-3: Correct and incorrect identification results of organic grape tomatoes and baby-cut carrots

| | Percentage (%)[1] | |
|---|---|---|
| | Tomatoes (n=44) | Carrots (n=46) |
| Preferred organic sample | 64 | 63 |
| correctly identified organic sample | 68 | 76 |
| incorrectly identified organic sample | 32 | 17 |
| Preferred conventional sample | 36 | 37 |
| correctly identified organic sample | 38 | 12 |
| incorrectly identified organic sample | 63 | 88 |

[1]there were some missing data points, thus percentages do not add up to 100

Table 4-4: LPM regression analyses results for consumer preference for organic grape tomatoes and baby-cut carrots

| | Tomatoes (n=44) | | Carrots (n=46) | |
|---|---|---|---|---|
| Independent variable | Coefficient (std error; *p*-value) | Model *p*-value | Coefficient (std error; *p*-value) | Model *p*-value |
| Level of commitment to organic food purchase[1] | | 0.167 | | 0.678 |
| committed | -0.338 (0.191; 0.850) | | 0.143 (0.173; 0.412) | |
| non-committed | -0.016 (0.161; 0.919) | | 0.123 (0.187; 0.517) | |
| constant | 0.438 (0.119; 0.001) | | 0.294 (0.121; 0.019) | |
| Length of time as an organic food consumer[2] | | 0.258 | | **0.008** |
| 2 - 5 years | 0.102 (0.161; 0.529) | | 0.527 (0.164; 0.003) | |
| > 5 years | -0.243 (0.203; 0.238) | | 0.120 (0.168; 0.478) | |
| constant | 0.368 (0.111; 0.002) | | 0.188 (0.112; 0.103) | |

[1]base case = non-organic food consumer

[2]base case = 0 - 2 years

Table 4-5: LPM regression analyses results for the ability to correctly identify the organic grape tomatoes and baby-cut carrots

| | Tomatoes (n=44) | | Carrots (n=46) | |
|---|---|---|---|---|
| Independent variable | Coefficient (std error; *p*-value) | Model *p*-value | Coefficient (std error; *p*-value) | Model *p*-value |
| Level of commitment to organic food purchase[1] | | 0.249 | | 0.951 |
| committed | -0.238 (0.199; 0.240) | | -0.029 (0.186; 0.876) | |
| non-committed | 0.089 (0.168; 0.599) | | 0.033 (0.200; 0.868) | |
| constant | 0.438 (0.124; 0.001) | | 0.467 (0.133; 0.001) | |
| Length of time as an organic food consumer[2] | | 0.425 | | **0.036** |
| 2 - 5 years | -0.115 (0.168; 0.499) | | 0.464 (0.174; 0.011) | |
| > 5 years | -0.267 (0.212; 0.199) | | 0.167 (0.181; 0.363) | |
| constant | 0.526 (0.115; 0.000) | | 0.250 (0.119; 0.041) | |
| Consumption frequency of food product[3] | | 0.836 | | 0.523 |
| once to several times per week | -0.033 (0.160; 0.836) | | -0.105 (0.163; 0.523) | |
| constant | 0.433 (0.092; 0.000) | | 0.533 (0.131; 0.000) | |

[1]base case = non-organic food consumer

[2]base case = 0 - 2 years

[3]base case = once to several times per month

**4.7 Literature cited**


Basker, D. (1992). Comparison of taste quality between organically and conventionally grown fruits and vegetables. *American Journal of Alternative Agriculture, 7*(3), 129-136.

Chryssohoidis, G. M., & Krystallis, A. (2005). Organic consumers' personal values research: Testing and validating the list of values (LOV) scale and implementing a value-based segmentation task. *Food Quality and Preference, 16*(7), 585-599.

Cunningham, R. (2002). *Canadian natural and organic retail markets*. Alberta: Alberta Agriculture and Food Publication.

Cunningham, R. (2004). *Organic food*. Alberta: Alberta Agriculture and Food Publication.

Davies, A., Titterington, A. J., & Cochrane, C. (1995). Who buys organic food? A profile of the purchasers of organic food in Northern Ireland. *British Food Journal, 97*(10), 17-23.

Hansen, H. (1981). Comparison of chemical composition and taste of biodynamically and conventionally grown vegetables. *Qualitas Plantarum – Plant Foods for Human Nutrition, 30*, 203-211.

Hill, H., & Lynchehaun, F. (2002). Organic milk: Attitudes and consumption patterns. *British Food Journal, 104*(7), 526-542.

Johansson, L., Haglund, A., Berglund, L., Lea, P., & Risvik, E. (1999). Preference for tomatoes, affected by sensory attributes and information about growth conditions. *Food Quality and Preference, 10*(4/5), 289-298.

Kihlberg, I., & Risvik, E. (2007). Consumers of organic foods: Value segments and liking of bread. *Food Quality and Preference, 18*(3), 471-481.

Macey, A. (2007). *Retail sales of certified organic food products, in Canada, in 2006*. Nova Scotia: OACC Publication.

Molyneaux, M., (2007). The changing face of organic consumers. *Food Technology, 61*(11), 22-26.

Padel, S., & Foster, C. (2005). Exploring the gap between attitudes and behaviour: Understanding why consumers buy or do not buy organic food. *British Food Journal, 107*(8), 606-625.

Poste, L.M., Mackie, D.A., Butler, G., & Larmond, E. (1991). Laboratory methods for sensory analysis of food. Ontario: Agriculture Canada Publication.

Roddy, G., Cowan, C. A., & Hutchinson, G. (1996). Consumer attitudes and behaviour to organic foods in Ireland. *Journal of International Consumer Marketing, 9*(2), 41-63.

Roitner-Schobesberger, B., Darnhofer, I., Somsook, S., & Vogl, C. (2008). Consumer perceptions of organic foods in Bangkok, Thailand. *Food Policy, 33*(2), 112-121.

Saba, A., & Messina, F. (2003). Attitudes towards organic foods and risk/benefit perception associated with pesticides. *Food Quality and Preference, 14*(8), 637-645.

Schifferstein, H. N. J., & Oude Ophuis, P. A. M. (1998). Health-related determinant of organic food consumption in the Netherlands. *Food Quality and Preference, 9*(3), 119-133.

Schutz, H. G., & Lorenz, O. A. (1976). Consumer preferences for vegetables grown under "commercial" and "organic" conditions. *Journal of Food Science, 41*(1), 70-73.

Vanderkloet, J. (2008). *Organic food consumers: modeling the food choice process.* Working paper. The University of Alberta.

Zhao, X., Chambers, E., Matta, Z., Loughin, T. M., & Carey, E. E. (2007). Consumer sensory analysis of organically and conventionally grown vegetables. *Journal of Food Science, 72*(2), 87-91.

## Chapter 5:
## Summaries, conclusions, and future recommendations

### 5.1 Summaries

Consumer demand for organic food is growing around the globe (Sahoto, 2004). Increased demand around the world appears to have arisen from consumer concerns regarding health, the environment, and animal welfare issues; taste and quality are also important factors (Davies, Titterington, & Cochrane, 1995; Schifferstein & Oude Ophuis, 1998; Williams & Hammitt, 2000; Harper & Makatouni, 2002; Hill & Lynchehaun, 2002; Lockie, Lyons, Lawrence, & Mummery, 2002; Magnusson, Arvola, Hursti, Aberg, & Sjoden, 2003; Saba & Messina, 2003; Padel & Foster, 2005). Although many studies have investigated motivations for organic food choice, there are few published studies on Canadian consumers. In Canada, the demand has increased by 15 – 20% per year since the late 1990's (Saskatchewan Agriculture & Food, 2002). From 2005 to 2006, sales of organic food in Canadian supermarkets grew 28% (Macey, 2007). The majority (77%) of consumers in Canada currently purchase some organic food (Cunningham, 2007). An examination of why consumers purchase organic food will lead to greater insight and understanding of Canadian organic food consumers.

The present research employed a qualitative method to study the values motivating organic food purchase. Results were further used to differentiate the strength of these motivating values and consumer commitment to organic food. Consumer preference for organic and conventional produce was also examined.

#### *5.1.1 Chapter 2*

Laddering interviews were conducted to identify the core motivating values underlying organic food purchase decisions by non-committed organic food consumers. These values consisted of health, environmental concern, ethical considerations, having a good quality of life, and feeling good about the self. *Personal health* was found as the dominant value motivating organic food choice followed by *protect the environment*. The absence of *chemicals* (pesticides, herbicides, and fertilizers) was found to be the most important attribute of organic foods and linked to both health and environmental values. The interviews uncovered 3 dominant perceptual orientations (personal health, protection

of the environment, social/ethical considerations) and also revealed 2 consumer profiles (the 'internals', motivated by personal benefit, and the 'externals', motivated by both personal and societal benefits). This study provides awareness and appreciation for the differing organic food consumer profiles together with their motivations for organic food purchase.

### *5.1.2 Chapter 3*

A questionnaire was developed based on results from the laddering interviews (Chapter 2) to assess the strength of values motivating organic food purchase among committed, non-committed, and non-organic food consumers. A consumer panel was carried out to administer the questionnaire and to conduct a sensory evaluation (Chapter 4). Results of the questionnaire revealed that the strength of motivation by health, environmental, and social/ethical values increases as the purchase frequency of organic food increases. That is, committed organic food consumers were motivated by health, environmental, and social/ethical values more strongly than non-committed consumers, who were motivated by these values more strongly than non-organic consumers. This study presents greater knowledge regarding the strength of motivating values among consumer commitment levels.

### *5.1.3 Chapter 4*

A paired preference sensory evaluation was carried out to determine consumer preference for organic or conventional grape tomatoes and baby-cut carrots, products frequently identified by participants in the laddering interviews (Chapter 2) as having a preferred taste over their conventional counterparts. It was found that there was no significant difference in preference for organic or conventional grape tomatoes and baby-cut carrots. Consumers believed that the sample with better taste/more flavor was organic; thereby confirming the perception or expectation that organic food tastes better than conventional food (Roddy, Cowan, & Hutchinson, 1996; Schifferstein & Oude Ophuis, 1998; Hill & Lynchehaun, 2002; Saba & Messina, 2003; Padel & Foster, 2005; Kihlberg & Risvik, 2007). Results also suggest that consumers with more experience

eating organic foods have more appreciation and familiarity for the way the food tastes compared to consumers who have less experience eating organic food. This study adds to the existing knowledge about consumer preference for organic or conventional produce.

**5.2 Conclusions and future recommendations**

Findings of the present research contribute to the literature on organic food consumers. More specifically, it adds to prior research that: examines the underlying values that motivate organic food purchase, describes organic food consumer profiles in terms of purchase motivations and commitment level, and compares consumer preference for organic and conventional foods. Insights gained from the present research have implications for those in the Canadian organic food industry interested in obtaining greater knowledge of the organic food consumer.

Results from the laddering interviews (Chapter 2) provide an improved understanding into how consumers link attributes of organic food to consequences and personal values which motivate the purchase of these products. Findings have implications for future organic food communication strategies by providing the ability to employ multiple messages that communicate the benefits of organic food and how it relates to personal values held by the consumer. The existence of differing consumer types introduces another avenue of communication to attract new consumers.

There is no research, to our knowledge, comparing the strength of values motivating organic food purchase to commitment level. The findings from the questionnaire (Chapter 3) provide preliminary data on the differences in strength of health, environmental, and social/ethical values that motivate organic food choice among committed, non-committed, and non-organic food consumers. Further assessment of the strength of values that motivate organic food choice among these consumer segments is recommended as research on this area of focus is limited.

The results of the paired preference sensory evaluation (Chapter 4) adds to the existing literature investigating consumer preference for organic or conventional produce. Future studies examining the effects of demographic variables (e.g. length of time as an

organic food consumer) on consumer preference and ability to correctly identify the organic sample are suggested.

The future of the Canadian organic food market depends, to a large extent, on consumer demand. Through improved communication strategies, the Canadian organic food industry can secure continued growth and success during the constant expansion of organic foods into the supermarket domain. According to Cathy Kapica, Vice President, Global Health and Wellness, Ketchum, "Food is no longer just a nutrition issue, but it's a moral and social one as well…if you want to be in business in the years going forward, you need to be able to address these issues in a holistic way…Failure to act in this area is going to be perceived by consumers as a rejection of their values" (Kuhn, 2008).

**5.3 Literature cited**


Cunningham, R. (2007). *Farm to fork: Organics in Alberta*. Alberta: Alberta Agriculture and Food Publication.

Davies, A., Titterington, A. J., & Cochrane, C. (1995). Who buys organic food? A profile of the purchasers of organic food in Northern Ireland. *British Food Journal, 97*(10), 17-23.

Harper, G. C., & Makatouni, A. (2002). Consumer perception of organic food production and farm animal welfare. *British Food Journal, 104*(3/4/5), 287-299.

Hill, H., & Lynchehaun, F. (2002). Organic milk: Attitudes and consumption patterns. *British Food Journal, 104*(7), 526-542.

Kihlberg, I., & Risvik, E. (2007). Consumers of organic foods: Value segments and liking of bread. *Food Quality and Preference, 18*(3), 471-481.

Kuhn, M. E. (2008). Examining the landscape of food and wellness. *Food Technology, 62*(4), 64-65.

Lockie, S., Lyons, K., Lawrence, G., & Mummery, K. (2002). Eating 'green': Motivations behind organic food consumption in Australia. *Sociologia Ruralis, 42*(1), 23-40.

Macey, A. (2007). *Retail sales of certified organic food products, in Canada, in 2006*. Nova Scotia: OACC Publication.

Magnusson, M. K., Arvola, A., Hursti, U. K. K., Aberg, L., & Sjoden, P. O. (2003). Choice of organic foods is related to perceived consequences for human health and to environmentally friendly behavior. *Appetite, 40*(2), 109-117.

Padel, S., & Foster, C. (2005). Exploring the gap between attitudes and behaviour: Understanding why consumers buy or do not buy organic food. *British Food Journal, 107*(8), 606-625.

Roddy, G., Cowan, C. A., & Hutchinson, G. (1996). Consumer attitudes and behaviour to organic foods in Ireland. *Journal of International Consumer Marketing, 9*(2), 41-63.

Saba, A., & Messina, F. (2003). Attitudes towards organic foods and risk/benefit perception associated with pesticides. *Food Quality and Preference, 14*(8), 637-645.

Sahoto, A. (2004). Overview of the global market for organic food and drink. In H. Willer & M. Yussefi (Eds.), *The world of organic agriculture: statistics and emerging trends 2004* (pp. 21-26). Germany: IFOAM Publication.

Saskatchewan Agriculture and Food. (2005). Organics: Overview 2005. http://www.agr.gov.sk.ca/docs/processing/organics/OrganicsSector.asp

Schifferstein, H. N. J., & Oude Ophuis, P. A. M. (1998). Health-related determinant of organic food consumption in the Netherlands. *Food Quality and Preference, 9*(3), 119-133.

Williams, P. R. D., & Hammitt, J. K. (2000). A comparison of organic and conventional fresh produce buyers in the Boston area. *Risk Analysis, 20*(5), 735-746.

**Appendix 1:**
**Moderator guide for laddering interviews**

Interviewer introduces self, explain project, ground rules, mention audio taping of session, go over informed consent, and gives opportunity for participant to ask questions. Participant reads and signs consent form.

Script:

*Introduction*

- I'd like you to think about when you first started buying organic food. How long ago was that?
- What made you decide the change? What influenced you?
- In the past month, what organic foods have you purchased?

*Laddering portion*

- Why do you prefer the organic versions over the non-organic versions? What is it that makes the organic versions more desirable?

The interviewer will then choose one of the attributes mentioned and ask: "Why is that important to you?" This question will be repeatedly asked after each response.

In the event that the participant doe not "know" the answer when asked why a particular attribute is important to them, the question will be changed or rephrased. If they still cannot answer they will be asked what would happen if the attribute was not present. Alternatively, the interviewer will make a note of the problem area and come back later on in the interview; the interviewer will then carry on in a similar fashion for the other attributes mentioned. The interview will stop when the participant does not provide any further information.

*Conclusion*

- Please list your 3 favorite organic products to buy when grocery shopping.
- Why do you prefer these organic products?
- Of the organic foods that you've tried, what is your *least* favorite?
- What specific things did you dislike about this product?
- What kind of products would you like to see?

**Appendix 2:**
**Demographic questionnaire for laddering interviews**

1. Please indicate your gender:
   - ❒ Male
   - ❒ Female

2. Please indicate the age group that you belong to:
   - ❒ 18-29 years
   - ❒ 30-39 years
   - ❒ 40-49 years
   - ❒ 50-59 years
   - ❒ 60-69 years
   - ❒ 70 years plus

3. Where do you normally purchase your **grocery items**? (please circle the number that best represents your purchasing habits)

| | Most Often | Sometimes | Rarely | Never |
|---|---|---|---|---|
| Supermarkets (ie, Save-On, Safeway, Superstore) | 1 | 2 | 3 | 4 |
| Organic section in Supermarket (ie, Save-On, Safeway, Superstore) | 1 | 2 | 3 | 4 |
| Organic Grocery Stores (ie, Planet Organic) | 1 | 2 | 3 | 4 |
| Farmer's Markets | 1 | 2 | 3 | 4 |
| Wholesalers (ie, Costco) | 1 | 2 | 3 | 4 |
| Other: (please specify) | 1 | 2 | 3 | 4 |

4. How often do you purchase **organic foods**?
   - ❒ I only buy organic foods
   - ❒ I frequently buy organic foods
   - ❒ I sometimes buy organic foods
   - ❒ I rarely buy organic foods
   - ❒ I never buy organic foods

5. Please indicate the level of education that corresponds to what you have completed:
   - ❒ Some high school
   - ❒ High school graduate
   - ❒ Some university or college
   - ❒ College diploma/ degree
   - ❒ University undergraduate degree
   - ❒ Some post graduate university study
   - ❒ Post graduate university degree (Master's or Ph.D.)

6. Please indicate the range that represents your household income level in the year 2006, before taxes:
   - ❒ Less than $36,378
   - ❒ $36,378 - $72,756
   - ❒ $72,756 - $118,285
   - ❒ More than $118,285

**Appendix 3:**
**Questionnaire for consumer panel**

**Please rate the extent to which you agree or disagree with each statement.**

| | | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| 1 | The environment should be protected. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 2 | Buying organic food is a socially conscious choice. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 3 | My health is very important to me. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 4 | The production of conventional food does not harm the environment. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 5 | Conventional foods are just as healthy as organic foods. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 6 | Organic foods are healthier than conventional foods. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 7 | Organic farming methods benefit communities, people, and society in general. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 8 | The environment is adequately protected. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 9 | Organic food production practices are better for the environment than conventional practices. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 10 | Organic foods are healthier because they have no/less chemical residues than conventional foods. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 11 | Conventional farmers treat their livestock humanely. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 12 | The organic food companies are only interested in making a profit. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 13 | Organic food production is better for the environment because it uses no/less chemicals than conventional production. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 14 | Organic farmers are interested in improving society. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 15 | Organic foods are natural and therefore better for my health. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 16 | Eating organic food gives me some control as to how much chemicals I ingest. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |

| | | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| 17 | Organic food production is better for the environment because it uses no/less growth hormones than conventional production. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 18 | Animals from organic farms live a better life than those from conventional farms. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 19 | Big conventional food companies only care about making a profit. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 20 | Organic foods are healthier because they have no/less growth hormones, additives, and antibiotics than conventional foods. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 21 | Conventional farmers use sustainable farming practices. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 22 | Organic foods are more nutritious than conventional foods. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 23 | Buying organic food is not one of the things that I can do to help the environment. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 24 | If everyone ate organic food, the world would be a better place. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 25 | Conventional foods are safer to eat than organic foods. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 26 | Buying organic food is a political decision. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 27 | Organic farmers put more care into farming than conventional farmers. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 28 | Buying organic food makes me feel good about myself because I am eating healthily. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |
| 29 | Organic farming practices are more sustainable then conventional practices. | ❒1 | ❒2 | ❒3 | ❒4 | ❒5 |

*Thank you for completing this questionnaire!*

**Appendix 4:**
**Demographic questionnaire for consumer panel**

1. Please indicate your gender:

- ❒ Male
- ❒ Female

2. Please indicate the age group that you belong to:

- ❒ 18 – 29 years
- ❒ 30 – 39 yrs
- ❒ 40 – 49 yrs
- ❒ 50 – 59 yrs
- ❒ 60 – 69 + yrs

3. Where do you normally purchase your **grocery items**? (please circle the number that best represents your purchasing habits)

| | Most Often | Sometimes | Rarely | Never |
|---|---|---|---|---|
| Supermarkets (ie, Save-On, Safeway, Superstore) | 1 | 2 | 3 | 4 |
| Organic section in Supermarket (ie, Save-On, Safeway, Superstore) | 1 | 2 | 3 | 4 |
| Organic Grocery Stores (ie, Planet Organic, Organic Roots) | 1 | 2 | 3 | 4 |
| Farmer's Markets | 1 | 2 | 3 | 4 |
| Other: (please specify) | 1 | 2 | 3 | 4 |

4. How often do you purchase **organic foods**?

- ❒ I only buy organic foods
- ❒ I frequently buy organic foods
- ❒ I sometimes buy organic foods
- ❒ I rarely buy organic foods
- ❒ I never buy organic foods

5. When did you **first** start buying organic foods?

- ❒ This year
- ❒ 1 – 2 years ago
- ❒ More than 2 but fewer than 5 years ago
- ❒ At least 5 but fewer than 10 years ago
- ❒ 10 or more years ago

6. Please indicate the level of education that corresponds to what you have completed:

- ❒ Some high school
- ❒ High school graduate
- ❒ Some university or college
- ❒ College diploma/ degree
- ❒ University undergraduate degree
- ❒ Some post graduate university study
- ❒ Post graduate university degree (Master's or Ph.D.)

7. Please indicate the range that represents your household income level in the year 2007, before taxes:

- ❒ Less than $36,378
- ❒ $36,378 - $72,756
- ❒ $72,756 - $118,285
- ❒ More than $118,285

**Appendix 5:**
**Paired preference questionnaire for consumer panel**

**Paired Preference: Consumer Panel Sensory Evaluation of [sample]**

1. How frequently do you consume [sample]?

   ❒ Several times per week
   ❒ Once per week
   ❒ Several times per month
   ❒ Once per month
   ❒ Never

2. Taste the product on the left first, and then the product on the right second.

   Now that you've tasted both products, which one do you prefer?

   Please check the box that corresponds to the sample:

   ❒ _____ ❒ _____

3. Why did you prefer this sample?

   _____
   _____

4. One of the products you tasted was organic, which one do you think it was? Please write the sample number: _____

5. Why do you think this sample was organic?

   _____
   _____

*Thank you!*